

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 766.—Vol. XX.]

LONDON, SATURDAY, APRIL 27, 1850.

[PRICE 6D.]

**SPARE MATERIALS FOR SALE, BY PUBLIC AUCTION,**  
On Wednesday, the 9th day of May next, by Eleven o'clock in the forenoon, at  
GUSTAVUS MINES, in the parish of CAMBORNE, CORNWALL.

One 20-inch cylinder STEAM-ENGINE, complete; one 9-inch 9-foot plunger pole; one 9-inch 10-foot plunger pole; one 8-inch 9-foot plunger pole, with stuffing boxes and glands to match; two 10-inch H and top-door pieces; one 9-inch H and top-door piece; forty-seven 9-inch 9-foot pumps; two 8-inch 9-foot pumps; twenty 7-inch 9-foot pumps; forty-seven 6-inch 9-foot pumps; one 5-inch 9-foot working barrel; one 5-inch 9-foot sinking windlass; one 5-inch door-piece; 218 feet 9 inch square rods; 122 feet 8-inch square rods; 474 feet 7-inch square rods; 70 feet 6-inch square rods; 20 pair faggoted and common iron strapping-plates, staples, and glands; one steam-whim boiler; one underground balance; 180 fathoms tram-road iron; six 4-foot shelves; eight 2-foot shelves; two tons of old cast-iron; two tram waggon; a large quantity of steam whim chain; dressing-house, 60 feet long by 15 feet wide; one 42-inch, one 40-inch, two 36-inch, and one 30-inch smiths' bellows; miners' tools; flange and rod bolts, pump rods, ten tons of old wrought-iron, a large quantity of brass castings, and other description of brasses.

Further particulars may be had of Capt. Thomas Richards, Gustavus Mines, Camborne. April 23, 1850.

**MONMOUTHSHIRE.—SALE OF A VALUABLE IRON FOUNDRY AND PREMISES.**

**MR. H. M. PARTRIDGE** is instructed to **SELL, BY PUBLIC AUCTION,** at the King's Head Inn, Newport, on Wednesday, the 22nd day of May next, at One for Two o'clock precisely, all that valuable PROPERTY known as the

**MAES-Y-CWMWN IRON FOUNDRY,**  
Situate in the parish of MOU-YTHUS-LWYN, together with TWO good DWELLING-HOUSES and ENTRANCE LODGE.

The FOUNDRY is REplete with EVERY CONVENIENCE, and comprises stove, engine-house, a single power STEAM-ENGINE, with gearing, &c., to work a blowing-fan, boiler, grate, bars, steam and water-pipes, cupola furnace, with connecting air-pipes, from the fan.

A branch tramroad connects the foundry with the line of tramroad to Newport, Rhymney, Tredegar, &c., from whence iron, coal, and coke may be obtained; there is a fine spring of water on the premises, and a small rivulet running through them.

This property, which comprises two acres, is held under a lease for 90 years, from the 24th June, 1840, subject to an annual ground-rent of £11, and offers a most desirable investment to any person conversant with the business, which may, at a trifling expense, be very considerably extended, and adapted to fitting-up and other purposes.

For further particulars apply to Mr. Edmund Beckingham, West of England Bank; or to Mr. H. M. Partridge, auctioneer, house and estate agent, Newport, Monmouthshire. St. Woollos House, Stow Hill, April 23, 1850.

**TO BE SOLD, pursuant to an Order made in the matter of**  
Joint-Stock Companies' Winding-up Acts, 1848 and 1849, and of the Banwen Iron Company, with the approbation of Richard Tiffin Kinsley, Esq., the Master of the High Court of Chancery, charged with the Winding-up of the Company some time in the month of May next, of which due notice will be given, at SWANSEA, in the county of GLAMORGAN, the MESSUAGES, FARMS, LANDS, TENEMENTS, and HEREDITAMENTS, called or known by the name of PANTYDDRAINEN, or BANWEN FARM, TEYRACH FARM, TONBURDDIN, otherwise TONBURDDIN FARM, YR-SYNNEN FARM, and YNESDOULID, otherwise YNYSTOMLYN FARM, containing 573 acres, or thereabouts, with the MINES and SEAMS of COAL, CULM, and IRONSTONE, and IRON MINES, QUARRIES, CLAY, QUARRIES, ROCKS, and STONES, in, upon, or under the said farms and premises hitherto used by the BANWEN IRON COMPANY, and also the WORKS and PLANT of and belonging to the said company.

The ESTATE is situate in the parish of CADOXTON juxta NEATH, in the county of GLAMORGAN, 13 miles from the town of Neath, and 16½ from the port of Swansea. The Swansea Canal is within 4 miles of the property, and is worked by a public tramway. The South Wales and Vale of Neath Railways are within a short distance of the estate.

The MINE is very rich in IRON ORE, and the LAND abounds with the finest ANTHRACITE COAL, which is found at the mouth of the pit.

The WORKS are capable of working and turning out weekly 90 tons of pig-iron.

Particulars and conditions of sale are in course of preparation, and may shortly be obtained (gratis) at the said Master's office, Southampton-buildings, Chancery-lane, London; of Messrs. Bristow and Tarrant, solicitors, 2, Bond-court, Walbrook, in the city of London, and Greenwich, in the county of Kent; of Mr. Adom, of No. 10, Coleman-street, in the city of London, the official manager of the said company; and at the Lamb and Flag Inn, Vale of Neath; and at the principal inns in the towns of Swansea and Neath.

The estate and works may be viewed any day between the hours of Ten in the morning and Five in the afternoon.—Dated April 25, 1850.

BRISTOW & TARRANT,  
No. 2, Bond-court, Walbrook, and Greenwich,  
Solicitors for the Official Manager.

**NEWPORT, MONMOUTHSHIRE.**

**VALUABLE MINERAL PROPERTY, with the COLLIERY and FIRE-BRICK WORKS, RAILWAY TRAMS, BARGES, and OTHER PLANT thereon.**

**TO BE SOLD, BY AUCTION, by order of the devisee in**  
trust of the late J. F. Hanson, Esq., deceased, in the month of June next, unless sooner disposed of by private contract, of which due notice will be given.

The ESTATE consists of between THREE and FOUR HUNDRED ACRES of LAND, and contains COAL of excellent quality, and IRONSTONE running under the whole extent, with LIMESTONE, BUILDING and PAVING STONE, and is situate in the parishes of HENLLIS and LLANTARNAM, distant about 4½ miles from the shipping port of Newport, with which an easy communication exists by means of the Monmouthshire Canal, which adjoins the property. The railway from Newport to Pontypool passes also within a short distance.

The MINERALS have been partially OPENED and PROVED, and the BRICK WORKS, which are amply supplied with coal and fire-clay, of the best quality, are of sufficient extent for the MANUFACTURE of TWO HUNDRED THOUSAND FIRE-BRICKS per MONTH, besides draining tiles.

The FARM BUILDINGS on the premises have been lately put into substantial repair, and the net annual surface rental, including an excellent manager's house and 17 cottages, amounts to about £400 per annum.

There are also on the Estate a LIMESTONE and QUARRY, and QUARRIES of good BUILDING and PAVING STONE.

For particulars apply on the premises; or to Mr. C. F. Phillips, 44, Lincoln's Inn-fields, and Mr. J. T. Church, 9, Bedford-row, London; or Mr. C. H. Croft, solicitor, Newport.

**TO BE SOLD, BY PRIVATE CONTRACT, A LEAD MINE,**  
in the county of CARNARVON, about 2 miles from the shipping port: the vein is about 12 inches thick, of solid lead.—Applications (post-paid) to be made to Mr. Hugh Jones, Penryn, Llandrury, near Carnarvon.

[This advertisement will not be repeated.]

**TO BE SOLD, on Advantageous Terms, a COPPER and SILVER-LEAD MINE, in MERIONETHSHIRE, NORTH WALES.—Applications**  
may be addressed "F. F." to "Y. Z." Deacon's Coffee-house, Walbrook, City.

**TO CAPITALISTS.—FOR SALE, a most valuable FREE-**  
HOLD PROPERTY, called the DARLSTON COAL MINES, situate at EXHALL, near Coventry, WARWICKSHIRE, consisting of ONE HUNDRED ACRES, or thereabouts, containing both COAL and IRONSTONE. This coal ground offers abundant resources for a first-rate colliery; it adjoins several collieries which are in great activity—the supply of coals being quite unequal to the demand. The Coventry and Nuneaton Railway runs over a corner of the ground, thereby affording locomotive carriage to all parts of the kingdom.

This property offers a very fair investment to capitalists, or for a public company, and the proprietor will render every facility to a purchaser by leaving the greater part of the purchase-money on mortgage, if required; or in case of a public company, he would take a royalty on the proceeds of the mines.

References may be made to Messrs. Field, Son, and Wood, stockbrokers, Warndon-court, Throgmorton-street, and to Messrs. Ellis and Son, estate agents, No. 26, Fenchurch-street, London.

A plan of the ground, with further particulars, may be obtained by applying (by letter, post-paid) to Mr. George Fowler, No. 9, Lincoln's Inn-fields, London.

**FOR SALE, at TING-TANG, GWENNAP, CORNWALL,**  
a HUNDRED-AND-THIRTY CYLINDER and CASE, 11 feet long, with piston, piston rod, and cylinder bottom to match. This cylinder is admirably adapted for a rock-acting engine, having a strong flange, expressly for being built in a loading (over an engine-shaft), if required, or coal pit. The hold-down bolts, and other articles, will be sold with or without the cylinder. This cylinder has only been worked within the space of two years, and will be sold for the very low price of £7 per ton, to include the case, piston, and cylinder bottom. The piston-rod will be sold with or without the other parts for 5d. per lb. Any company requiring immense steam-power for small capital, will find this an unusual opportunity.

To examine the above, please apply to Mr. E. Hales, on the mine; and for further particulars to Capt. Thomas Richards, Marazion.—April 22, 1850.

**LEAD MINES TO BE LET.—the LEAD MINES of FEE**  
DONALD, situated in the MINING DISTRICT of STRONTIAN, ARGYLLSHIRE.—The ORE is a good SULPHURET, yielding, by correct analysis, 87 per cent. of lead. There are several veins which have been partially worked, and hold out encouraging prospects of success; they are favourably situated for free levels, and a stream (important for washing the ore, &c.) flows across them. An easy road, a few miles in length, will convey the produce to Loch Sunnart, an arm of the sea (western ocean), whence it may be transported to any part of the United Kingdom.

The district has been surveyed by Mr. E. Hales, lecturer on mineralogy; and for further particulars application may be made to Messrs. Inglis and Burns, W.S., 16, Queen-street; or Mr. Alex. Rice, mineralogist, 2, Drummond-street, Edinburgh; and Mr. John Watson, factor, Strontian, Argyllshire.—Edinburgh, April 18, 1850.

**BLAIR IRON-WORKS.**—These extensive IRON-WORKS with the LEASES of the MINERAL FIELDS, as formerly advertised, will be EXPOSED FOR PUBLIC COMPETITION on or about the month of APRIL next, if not previously disposed of by private bargain.—In the meantime offers will be received, and information afforded, by Mr. Brown, 33, St. Vincent-place, Glasgow.

**EAST OF SCOTLAND MALLEABLE IRON COMPANY.**  
—The Directors have been authorised to RECEIVE OFFERS for the PURCHASE, or LEASE, of the MALLEABLE IRON WORKS at DUNFERMLINE—comprising a STEAM-ENGINE, of 80-horse power, working the machinery, consisting of FORGE and 2 FIDDLE BAR TRAINS, of 16 inches diameter, HAMMER and PATENT SHINGLING MACHINE; also a 16-inch MERCHANT BAR or RAIL MILL, a 12-inch MILL, for ordinary sized merchant bars, and an 8-inch GUIDE MILL, 13 PUDDLING FURNACES, and MILL FURNACES—the whole capable of producing 120 tons of bar-iron weekly.

A REFINERY STEAM-ENGINE, of 45-horse power, with blowing apparatus, complete, and two fires erected.

A complete SET of WORKSHOPS, containing a 20-horse power STEAM-ENGINE, driving a powerful roll-turning lathe, and blowing apparatus for smiths' fires.

A PUMPING and CLAY MILL STEAM-ENGINE, of 16-horse power, used for the manufacture of fire-brick, and pumping water for supply of engines.

Also, in course of erection, a STEAM-ENGINE, of 80-horse power, intended to drive the mills apart from the forges, having strong cast-iron framing laid down, and machinery suitable on the premises, which could be brought into active operation in a short period.

Together with the necessary TOOLS, LOOSE MACHINERY and STOCKS, of different kinds.

Offers will also be received for the PURCHASE of the ESTATE of TRANSY, consisting of about 107 imperial acres, with elegant MANSION-HOUSE and PLEASURE GROUNDS, situated about half a mile to the east of the town of Dunfermline.

Applications may be made to Mr. Talbot, manager of the works; or to Johnstone, Russell, and Craig, writers, Dunfermline.

Dunfermline, March 15, 1850.

**TO IRON MANUFACTURERS, ENGINEERS, ARCHITECTS, RAILWAY COMPANIES, &c.**—The attention of all PARTIES CONNECTED with the MANUFACTURE and USE of IRON, is invited to the IMPROVEMENTS lately PATENTED by Mr. MORRIS STEELING.

1. The TOUGHENED CAST-IRON, which, in round numbers, may be said to be double the strength of ordinary cast-iron, and from 60 to 70 per cent. stronger than the best, at an extra cost of from 10s. to 12s. per ton. This iron is strongly recommended for GIRDS, BEAMS, &c., for Railway Bridges, Fire-proof Buildings, and heavy machinery; also for Railway Chairs—and, in fact, for all purposes where cast-iron can be used, the same strength being obtained by lighter castings at less cost. The advantage of this for exportation is evident.

2. The IMPROVEMENTS in the MANUFACTURE of WROUGHT-IRON, whereby common or merchant bar is made equal in quality to best bar, and much stronger, at a very small cost. Also in the MANUFACTURE of RAILS, and TIRES FOR WHEELS, &c., a surface being produced very much harder than that of the iron now used, at an extra cost of only 7s. 6d. per ton.

Further particulars respecting the different kinds of iron, and the terms of license, &c., may be obtained on application to Mr. JEE, Civil Engineer, 6, John-street, Adelphi, London.—April 17, 1850.

**UNSTON IRON WORKS, NEAR SHEFFIELD.**  
Messrs. RANGELEY, WRIGHT, and Co. invite the attention of IRON MANUFACTURERS, IRON FOUNDRIES, &c., to their DERBYSHIRE PIG-IRON (smelted entirely with coke), which they can with confidence recommend for all purposes where purity of metal, combined with tenacity or strength, is an object. Their No. 3 pig-iron is sufficiently fluid for all descriptions of foundry-work. PIPING made from this quality will admit of almost any amount of hydraulic pressure. As a mixture with tender iron, or for purposes requiring great strength, their No. 4 is particularly adapted. For FORGE PURPOSES, the loss from waste in clinder, &c., is much below the usual average, and the product a very superior iron.

Messrs. R. W. and Co. also beg to inform their customers, &c., that having purchased an extensive assortment of models and apparatus from Messrs. Wm. Graham and Co., of Millon Iron-works (who have declined business), and having engaged experienced workmen from that establishment, they are in a position to furnish ALL DESCRIPTIONS OF CASTINGS, suitable for the above branches, and at moderate prices.

**BEALBURY COPPER AND SILVER-LEAD MINE.**  
In shares of £1 each.—(No further call will be made).

Managed by a Finance Committee, in whose Names the Moneys are paid into the Bankers.

A large proportion of the shares have been subscribed for, and the remaining shares are for disposal, on application to the Secretary, who will give certificates for the same, by which the holder is secured his interest in the mine, and entitled to the dividends, without the risk of any liability.

Prospectuses, with reports, may be had at the offices of the company, 4, Charlotte-row Mansion-house, London. THOMAS S. BEST, Secretary.

**ROCHE ROCK TIN MINING COMPANY.**  
Capital £5000, in 5000 shares, of £1 each.

No further call will be required, and no liabilities can be incurred.

NOW AT WORK ON THE COST-BOOK SYSTEM.

BANKERS—The London and County Joint-Stock Bank.

MANAGER ON THE MINE—Captain Pinch.

SECRETARY—John Martineau, Esq.

OFFICES—1, ROYAL EXCHANGE BUILDINGS, LONDON.

This valuable MINE is situate in the parish of ROCHE, near St. Austell, CORNWALL, and is held under a lease of 21 years, at a royalty of 1-20th. It is bounded on the south-west by Old Beam Mine, and on the south-east by the Great Rocks Tin Mines—two of the largest and richest mines ever worked in this district; the attested profits from which exceed £250,000—both of which are now at work. The sett is in the junction of the kylls and granite, which greatly enhances its value.

"The mine is looking well—in fact, much improved; the tribute is taken at 2s. in the £1 less, being 10s. in the £1—the men paying all expenses."—Extract of a Letter from Mr. Joseph Knight.

Applications for the remaining shares to be made to the secretary of the company No. 1, Royal Exchange Buildings.

**STAFFORDSHIRE COAL MINING COMPANY.**  
Capital £10,000, in shares of £1 each, to be paid on allotment.

(No further call will be made).

BANKERS—Messrs. Rogers, Olding, and Co., Clements-lane.

This COMPANY is FORMED for the purpose of WORKING valuable COAL MINES in STAFFORDSHIRE, proved by pits already sunk. The necessary machinery for commencing the colliery is erected; and, from estimates carefully made by competent parties, will return full 25 per cent. per annum.

Applications for prospectuses and shares to be made to W. M. Kearns, Esq., No. 5, Red Lion-square; or to Charles F. Ash, Esq., C.E. at the Company's offices, No. 4, Charlotte-row, Mansion-house, London. THOMAS S. BEST, Secretary.

**TREBELLANS AND TREBSKYN SILVER-LEAD MINES,** situate in the parish of CUBERT, in the county of CORNWALL, a short distance west of East Wheal Rose.

BANKERS—Messrs. Martin, Stone, and Martin, Lombard-street.

SECRETARY—Mr. R. Thomas.

OFFICES—8, GEORGE-YARD, LOMBARD-STREET.

These mines were lately worked and well known as the Cubert Silver-Lead Mines, from which about £7000 worth of ores were raised within two years. A larger engine being required, and by which means two productive lodes will be operated on at the same time, with little additional expense, the present proprietors have decided on disposing of a limited number of shares in this unusually promising undertaking, for that purpose. Seldom does such a favorable opportunity offer for temporary or permanent investment.

Mr. R. Thomas will, on application, afford every information that may be required.

**WHEAL SAMSON CONSOLS.—In 10,000 shares of £1 each.**  
All paid.—No calls.—No liabilities.—No forfeiture of shares.

This MINE is situated in the parish of ST. TEATH, CORNWALL, and is held under a lease for 21 years, at 1-15th dues. Several branches of the lode have been opened upon at about 15 fathoms from the surface, and ores have been extracted of unprecipitated value. The opportunities for working the mine, at a trifling cost, are unusual. The whole of the lode is completely drained to the depth of from 70 to 80 fathoms, which may be worked away by levels from the sea shore—obviating the necessity of erecting machinery or sinking shafts.

An average assay produced—copper, 9½ per cent.; silver, 340 ozs. per ton; gold, 11 dwts. 49 grs.; whilst some samples have produced 1500 ozs. of silver, and 5 ozs. of gold to the ton of ore.

For prospectuses and shares, apply to the secretary, at the offices, 15, Fish-street-hill.

**ANALYSIS OF THE STEAM-ENGINE.**—Now publishing in the "ARTIZAN," an ANALYSIS of an ENGINE, of the most approved construction, with PLATES of the DETAILS, half and quarter size.—The Number for MAY contains a fine Plate of Penn's Trunk Engines on board the Argyll—Spray's Patent Self-acting Feed Apparatus—Galloway's Patent Boilers at the Gutta Percha Company's Works—Shepherd's Patent Gales—Light versus Heavy Locomotives, by Mr. Adams—Particulars of the Plans for Supplying Copenhagen with Water, Gas, and Sewerage—Experiments on Hollow Bricks—New Steamers, Patents, &c.—May be ordered of any bookseller, price 1s., or will be sent free for 15 stamps, addressed to the Artizan Office, 69, Cornhill.

**WANTED, in a MANUFACTURING BUSINESS and IRON TRADE, A PARTNER,** who can command from £5000 to £8000, and who may be actively engaged or otherwise. The business is well established, and in full operation, yielding good profits, and capable of considerable improvements.—Communications, addressed to "A. B.," 25, Basinghall-street, London, will have prompt attention. N.B.—None but principals will be treated with.

**WANTED,--DOUBLE-ANGLED WROUGHT-IRON TRAMPLATES.**—Offers to supply the same to be sent to Mr. William Clark, Holmes Colliery, Rotherham. FOR SALE.—A SECOND-HAND 60-horse HIGH-PRESSURE PUMPING-ENGINE, 30-inch cylinder, 7-foot stroke, with two cylindrical boilers, in excellent condition.

**TO COLLIERY SPECULATORS.**—Unforeseen circumstances have placed a fine CURRENT-GOING COLLIERY, excellently situated, and in complete working order, in the hands of the lessors, who will allow a great portion of the stock to lie over at interest, and make great reductions of rent, to an enterprising tenant.—Letters to be addressed "D.," care of the Editor of the Mining Journal, No. 26, Fleet-street, London.

**STEAM-ENGINE WANTED.—A SECOND HAND 70-in.** diameter STEAM-ENGINE, or thereabouts, WANTED; 10-foot stroke in the house, and 10-foot in the pit.—All particulars of the same, addressed to Edward Jones, Esq., Pendre, Holywell, Flintshire, enumerating appendages, length of time at work, size of boilers, when and where constructed, and lowest price delivered at Holway Lead Mine, near Holywell.

**STEAM-ENGINE FOR SALE.—FOR SALE, at WHEAL** VYVYAN MINE, BY PRIVATE CONTRACT, a 26-inch cylinder STEAM-ENGINE, 7-foot stroke in the cylinder, and 6-foot stroke in the shaft, with boiler, about 8 tons.—Apply to Captain H. Martin, on the mine. Constantine, April 4, 1850.

**STEAM-ENGINE, &c., FOR SALE.—TO BE DISPOSED** OF, BY PRIVATE CONTRACT, a 20-inch cylinder PUMPING ENGINE, with 91 tons boiler, complete; 7-inch main-rods. 1 16-in. 8-inch drawing-lift, 2 balance-bobs, 30 fathoms iron flat-rods, horse-whim rope and kibbles, smith and miners' tools, 36-inch smith's bellows, a quantity of new and old iron and timber, &c., with engine-house and boiler-house roofs (slated). The whole of which will be found in excellent condition, and may be seen at Wheal Barbara Mine, in the parish of St. Kew, Cornwall; and to treat for the same, apply to Capt. Henry F. Stephens, Rose Cottage, Wadebridge, Cornwall.—April 23, 1850.

**MINING OFFICES, 3, GEORGE-YARD, LOMBARD-STREET, LONDON.**—Mr. T. P. THOMAS is a BUYER of SHARES in Wheal Seal, North Pool, South Wheal Frances, Trelawny, Wheal Elizabeth, Cwm Erfin, Levant, Court Grange, Lisaburne Mines, and Santiago; and is a SELLER in Alfred Consols, Bedford, Penzance Consols, Pendarves Consols, East Gunnis Lake, East Buller, Gustavus Mines, Stray Park, Tolcarne, Kingett and Bedford, South Tolgas, Treviskey and Barriar, South Basset, Tincroft, West Wheal Trawaury, Wheal Comfort, Wheal Mary Ann, Wheal Margaret, and South Trelawny.

T. P. THOMAS is generally in a position to BUY and SELL at close MARKET PRICES, and will be happy to afford information upon application.

N.B.—MINES INSPECTED.

**MINING PROPERTY.**—Mr. HERRON has SHARES in the best DIVIDEND MINES FOR SALE, and which will give to the purchaser 17 to 25 per cent. for the outlay; amongst others are the following:—Carn Bra, South Tolgas, North Roakear, Bedford, Tincroft, Great Devon Consols, Treviskey and Barriar, East Wheal Rose, West Caradon, Trelawny, Wheal Comfort, Wheal Margaret, Condurrow, South Basset, Wheal Trelawny, North Pool, South Wheal Frances, Stray Park, and Cobre Mines.—Mining Offices, 33, Clements-lane, Lombard-street.

**MESSRS. DURANT & CO., MINING OFFICES, No. 58,** LOMBARD-STREET, are instructed to SELL Penzance Consols at £4; Helgstrand Down Consols, £4; Caradon Wheal Hooper, £4; South Wheal Josiah, £4.

\* \* \* SHARES of all DESCRIPTIONS BOUGHT and SOLD, and MINERAL PROPERTY, COLLIERIES, &c., REGISTERED FOR SALE.

**MR. T. A. READWIN, MINING OFFICES,** 2, WINCHESTER-BUILDINGS, OLD BROAD-STREET, LONDON.

**MR. C. S. RICHARDSON, CIVIL ENGINEER, LAND** AND MINING SURVEYOR.

No. 15, OLD BROAD-STREET, LONDON.

**MR. R. TRIPP, MINING AND SHARE OFFICES,** ST. MICHAEL'S CHAMBERS, ST. MICHAEL'S-ALLEY, CORNHILL, LONDON.

**MR. GEORGE BATE, JUN., CIVIL ENGINEER AND** SURVEYOR, WOLVERHAMPTON.

Offices in Queen-street, corner of Piper's-row. N.B.—UNDERGROUND MINING SURVEYS accurately executed.

**JAMES LANE, MINING SHARE DEALER,** 80, OLD BROAD-STREET, LONDON.

**GUADALCANAL SILVER MINING ASSOCIATION.**—The attention of the shareholders is particularly requested to the FIFTH and LAST PAYMENT of TEN SHILLINGS per share on the NEW SHARES, which will fall due on the 1st of May next. The Directors also think it right to announce their intention of enforcing the penalty of forfeiture against all such shares in respect of any call or calls upon which due payment shall not have been made at that date.

34, Broad-street-buildings, April 10, 1850. By order, H. T. RYDE, Sec.

**LINARES LEAD MINING ASSOCIATION.**—Notice is hereby given, that the HALF-YEARLY GENERAL MEETING of the shareholders in this Association will be HELD at the offices, No. 2, New Broad-street, London, on Wednesday, May 8th, at Two o'clock precisely, in accordance with the Regulations of the Company.

London, April 24, 1850. By order of the Board, G. EATON, Secretary.

**WEST WHEAL JEWEL MINING ASSOCIATION.**—Notice is hereby given, that the ANNUAL GENERAL MEETING of the shareholders will be HELD at the Company's offices, as under, on Monday, the 13th of May next, at Twelve for One o'clock precisely.

WM. NICHOLSON, Secretary. 37, Old Broad-street, April, 1850.

**WHEAL MAY MINING COMPANY.—A GENERAL** MEETING of this Company will be HELD at their offices, 15, Old Broad-street, at Twelve o'clock, on the second Monday in May (the 19th), for the purpose of revising the Rules of the Company, and deciding the necessary steps to be taken to raise additional capital to carry out the working of the mine on a much larger scale.

15, Old Broad-street, April 23, 1850. CHARLES SAM. RICHARDSON, Purser.

**STEAM TO INDIA AND CHINA, via EGYPT.**—Regular MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS to CEYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG.

THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers—starting from Southampton on the 20th of every month; and from Suez on or about the 10th of the month.

Bombay.—Passengers for Bombay can proceed by this company's steamers of the 29th of the month, to Malis, thence to Alexandria by her Majesty's steamers, and from Suez by the Honourable East India Company's steamers.

MEDITERRANEAN.—Malta.—On the 20th and 29th of every month. CONSTANTINOPLE.—On the 29th of the month. ALEXANDRIA.—On the 20th of the month.

SPAIN AND PORTUGAL.—Vigo, Oporto, Lisbon, Cadiz, and Gibraltar, on the 7th, 17th, and 27th of the month.

For plans of the vessels, rates of passage-money, and to secure passages and ship cargo, apply at the company's offices, No. 132, Leadenhall-street, London; and Oriental-place, Southampton.

**INDURATED AND IMPERVIOUS STONE, CHALK, &c.**—AGENTS, with capital, are WANTED in ALL TOWNS to SUPPLY (under British and Foreign Patents) the great demand for HUTCHISON'S MATERIALS—hard as granite, impervious to moisture, vermin, &c.; the cheapest and most durable for all buildings, hydraulic, paving, monumental and decorative work.—The profits are large.

Apply to HUTCHISON & CO., 140, Strand, London; or Tunbridge Wells, Kent, and Caen, Normandy, stating name and address, and capital at command.

N.B.—Houses cured of damp. The produce of soft stone quarries, chalk, plaster of Paris, wood, pasteboard, and all absorbent materials indurated to resist frost, vermin, &c. LICENCES GRANTED.

**ASSAYING AND ANALYSIS.—ASSAYS and ANALYSES** of MINERALS, METALS, SOILS, FURNACE, and all other MANUFACTURING PRODUCTS. INVENTORS and INTENDING PATENTEES assisted in PERFECTING any INVENTION involving an intimate knowledge of chemistry.

INSTRUCTION in all branches of ASSAYING, ANALYSIS, and METALLURGICAL and MANUFACTURING CHEMISTRY.

Communications to be addressed to Mr. Mitchell, 23, Hawley-road, Kentish Town.



## Transactions of Scientific Bodies.

## MEETINGS DURING THE ENGLISH WEEK.

THURSDAY	Royal Botanic—Inner Circle, Regent's Park	8 P.M.
MONDAY	Medical—4, Bolt-court, Fleet-street	8 P.M.
TUESDAY	Civil Engineers—25, Great George-street	8 P.M.
WEDNESDAY	Horticultural—71, Regent-street	1 P.M.
THURSDAY	Royal—Somerset-house	8 P.M.
	Zoological—11, Hanover-square	3 P.M.
	Antiquaries—Somerset-house	8 P.M.
FRIDAY	Royal Institution—Albemarle-street	8 P.M.
	Botanical—20, Bedford-street, Covent-garden	8 P.M.
SATURDAY	Westminster Medical—17, Saville-row	8 P.M.

## ROYAL INSTITUTION—AGRICULTURAL GEOLOGY.

Prof. ANSTED resumed his course of lectures on "Practical Geology" on Thursday. In his last lecture, he had given a general outline of those facts of geology on which its practical application chiefly depended—the nature of the principal rock masses, the way in which the materials of the earth's crust lay in successive strata, and the manner in which these strata had been tilted up, as it were, and broken as if by mechanical violence. Upon the surface of these was found a clothing of vegetable soil, or earthy accumulations, which provided, or contained, the ingredients required for the sustenance of plants. The further consideration of this earthy matter, its use, nature, and origin, and the possibility of improving it, would form the subject of the present lecture. The application of geological knowledge to agriculture, involved two distinct subjects: the one had reference to the origin of the soil, the relation of the soil to the underlying rocks, and the possibility of improving it by admixture with various materials; the other subject was that of draining the soil locally, and by those larger works, where considerable tracts are brought into cultivation, which naturally, or accidentally, have gone out of cultivation from the too abundant presence of water.

They must first see what was the nature of plants, what were contained in them, and what was the kind of sustenance required before they could understand the nature of the soil. Plants consisted of certain admixtures of mineral ingredients, arranged together in a certain order. By far the most important of these materials was carbon, and there was always present a considerable quantity of water and various gases; but, besides, there were found in plants a number of other elementary substances—at least, in some forms, they were an approximation to elements. These were lime, magnesia, potash, soda, silica, alumina, water, and even sulphur and phosphorus. These were required by plants generally in varying proportions; but a large quantity of silica was indispensable. These materials might be considered the food of plants, for without them, plants would not live at all, or continue to grow; or, continuing to grow, would not produce fruit; for either of those cases are possible. For these materials they were dependent partly on the atmosphere, and partly and chiefly on the earth in which they grow.

Soils were derived in various ways, all of which were reducible to two—viz.: the disintegration and decomposition of the underlying strata, or the deposit of alluvial mud. These were the only two conditions under which soil could be formed; but with regard to the nature of the soil, there were several things to be taken into consideration. A good deal depended on the depth of soil, which varied from  $\frac{1}{2}$  in. to 100 ft., and the texture of the soil, which depended a good deal upon the underlying rocks. The fertility of the soil depended partly upon the depth, and partly upon the texture. The learned professor here directed attention to a variety of diagrams, showing the relation of the soil to the underlying rocks. In one of these, which will show the nature of the whole, the firm granite was shown at the base, then a sort of rubble, then decomposed granite, then granitic grit, and lastly soil, which being thus derived, gave clear indications of its granitic origin, as a soil derived from a slate rock would also exhibit signs of its origin. It became, then, an important question to determine, if possible, what there was in soils which was essential to fertility. Looking at particular instances of very fertile soils, the proportions in which the various substances were present did not seem to be very important. He would take three or four cases of the most fertile soils known upon the earth. First, there was the black earth of Russia (the origin of which was not very manifest), which was excessively productive. It was situated on the shores of the Caspian Sea, and occupied a comparatively small district, yet it fed twenty millions of inhabitants, and exported yearly in addition fifty million bushels of corn. This was produced every year without variation in quantity, rotation of crops, or manure. The cotton soil of India produced also enormous crops without manure; but with a rotation consisting of one year cotton and two years different sorts of corn; but this had gone on without faltering or manuring for 2000 years, without any perceptible deficiency in the fertility of the soil. The alluvial deposits of the Nile were so far different, that the yearly inundations of the river might renew some of the ingredients. The best and most fertile land of England could not be compared in quantity of produce, and yet it was not different in the materials of its composition; the most fertile marls, containing, for instance, 70 per cent. of silica, and 20 per cent. of alumina.

The following was the composition of the three remarkable soils he had described:—

	Black earth of Russia.	Cotton soil of India.	Alluvial soil of the Nile.
Silica	75	40	42
Alumina	9	20	24
Oxide of iron	3	1	Equal proportions.
Water	7	—	—
Nitrogen	3	—	—
Carbonate of lime	—	16	—
Carbonate of magnesia	—	10	Very little.

Seeing, then, that in these instances the proportions of the ingredients were so various, it was impossible to consider that that was a matter of great importance. It was necessary, then, only to have the ingredients with a certain depth, mechanical condition, and texture of soil, with the water acting upon it in a certain way, to secure fertility. Of course, if the soil did not contain the ingredients, it could not be fertile; but it mattered little, if those ingredients were present, what were their proportions.

All derived soils depended upon the underlying rocks, and as it was easy to group rocks into clays, sands, and limes, so soils might be grouped in the same way, as alluminous or clayey, calcareous or limey, and silicious or sandy. There were, of course, numerous admixtures of these, and he should add that a very fertile soil was derived from crystalline or igneous rocks, when they were in a particular state. Basalt more frequently furnished this kind of soil. The learned professor then pointed out, on a geological map, the principal districts in England where each of these soils prevailed, and described more particularly the varieties of soil based upon the division he had made.

It would be unnecessary to describe the nature of alluvial deposits, except by a reference to the maps (two large maps of the deltas, of the Nile, in Egypt, and of the Wash, on the eastern coast of England). Deposits of this kind were either made naturally or artificially. In the first case, a river brought down solid matter from the upland districts. At first it moved rapidly, and the solid matter was kept in a state of suspension in the water until it reached the plain. There, as its course became slower, it became also more tortuous; and every turn retarded it still more, until at length the stream became almost imperceptible, and the solid matter was deposited. Artificial deposits were made when the water, charged with solid matter, was artificially imprisoned by being directed into embankments. As soon as it became quite still, it deposited its solid matter, and the water was then quietly run off the top into the sea, and another influx of water, charged with solid matter, was permitted; this was called "warping." The subject now naturally intruded itself of drainage, and the best modes of throwing the water off the land. Of course the large operations going on in Lincolnshire and Cambridgeshire, in what was designated "the fen districts," were more properly engineering; but in draining soils for the purposes of agriculture, a knowledge of geology was most important. And, first, the actual condition of the land, geologically, must be observed, in order to know whether the rocks alternated in pervious or impervious beds. If the pervious bed is at the top, and immediately below it an impervious one, it is clear the water will run through the top bed, and stay upon the surface of the one beneath; and thus while the surface may be apparently quite dry, drainage may be most absolutely required. The plant throws its roots downwards, and becomes saturated with water, which may have lost some of its oxygen and those gases which are essential to plants, and to have gained from the soil salts which are unfavourable to vegetation. Draining here must take place with more reference to what is below than at the top, and long channels may have to be cut. On the other hand, if the impervious bed is uppermost, and has below it beds suitable for such a purpose, an equally effective drainage may be obtained at less cost by laying bare the permeable beds.

Again, the beds below may be charged with water from the natural

drainage of adjacent hills; and their perforation would only increase the evil. In all these cases, a knowledge of geology was indispensable to do the work effectually, and at the least expenditure of time, labour, and money. After referring to the principle which had directed the drainage of the fen district, in which he was of opinion sufficient advantage had not been taken of the fact that the land was above the level of the sea, he concluded as follows:—At the present moment, agriculturists are complaining of unremunerative prices; but they should not forget how little they have availed themselves of the helps of science. How can they expect to obtain a fair profit, if they neglect the simplest laws of Nature? While they do so, they will suffer; and the general interests of the country will suffer with them. Nature has provided everywhere evidences of the internal structure of the earth; the mineral substances near the surface are easily understood, and as easily brought into use; and in the management of land, the nature of each geological formation, which comes near the surface in particular districts, should be known to those who cultivate those districts. The texture and derivation of the soil, its relation to the subsoil, the dip and strike of the strata, the form of the surface, ought always to be familiar to the practical agriculturist; and every plan of cultivation ought to have reference to geological conditions. When science thus steps in to the aid of the farmer, he will no longer find his business unprofitable; but no work can be successful which does not refer to geological structure, or which disdains to estimate those facts respecting the earth's crust, which have been clearly determined by geologists.

## INSTITUTION OF CIVIL ENGINEERS.

APRIL 23.—WILLIAM CURRIE, Esq. (President), in the Chair.

The paper read was a "Description of the Insistent Pontoon Bridge, at the Dublin Terminus of the Midland Great Western Railway of Ireland," by Mr. R. Mallet, M. Inst. C.E. This bridge was stated to be situated on the line of approach from the city to the terminus, and formed a passage over one branch of the Royal Canal, where it crossed the Philaborough-road, upon the Foster Aqueduct. By the Act it was provided, that the navigation of the canal should be as free and unimpeded as possible; and from the circumstance of there being only a height of 16 inches between the intended surface of the road, and that of the water of the canal, it necessarily involved the placing of some kind of moveable bridge, of rather peculiar construction. After due consideration, the one described in the paper was designed and adopted, as being more suitable to the peculiarities of the situation than any other, owing to the water-channel being only 17 feet 4 inches in width, and that the passage to be made across it required to be at least 50 feet in breadth. The general idea of this form of moveable bridge, was that of a pontoon, or flat-bottomed boat, constructed of iron; the breadth being nearly equal to that of the water space to be crossed, and the length about equal to the width of roadway required. The deck beams of this pontoon projected over the sides, and rested, while in situ, upon a rebate, or continuous recess, formed along the top course of each quay wall, but while the pontoon was floating light, the projecting deck beams were 2 inches clear of this rebate, and the roadway platform, constituting the deck of the pontoon, was elevated to an equal height above the level of the top of the quay walls, or land, on each side; in this state the pontoon could be freely and readily pushed along the canal, for a distance of rather more than its own length, until it was brought opposite to a lye-by, provided by increasing the width of the canal at this point, and being put therein, the navigation was perfectly free.

As a pontoon afloat would form a very unstable roadway for carriages, means were provided for allowing it to settle down in the water, and rest firmly upon the rebates; and also for again raising it rapidly, so as to float clear of the rebates, and enable it to be moved away into the lye-by. For this purpose two large valves were placed in the bottom of the pontoon, one near each end, by which water was allowed to enter, and sink the pontoon, until it hung upon the projecting deck beams. For removing this water, when it was required to float the pontoon, a large syphon, of a particular construction, was provided, which was capable of being brought instantly into use, and of being as quickly detached, when a sufficiency of water had been withdrawn to enable the pontoon to be moved. These operations were stated to be performed very readily by one man, the navigation being cleared in four minutes, and the roadway restored in less than three minutes. The details of the construction of the pontoon, of the syphon, and all other parts of the work were then minutely given; also the total cost of the structure, which, exclusive of the masonry, was £1254, that of the masonry being about £500; and it was stated to have continued in use, with perfect satisfaction, since its completion in February, 1847. This form of construction was considered to be applicable, in situations where a comparatively narrow water channel had to be crossed by a very wide roadway; but as the particular circumstances of other localities might differ from the one in question, the author suggested various alterations in the details, so as to meet these exigencies.

The next paper read was a "Description of a Wrought-Iron Lattice Bridge, constructed over the line of the Rugby and Leamington Railway," by Mr. W. T. Doyno, Assoc. Inst. C.E. This bridge, which was 150 feet span, carried a public road over the Honingham cutting. It consisted of two girders, 156 feet in length, and 10 feet 6 inches in depth, placed at a distance of 20 feet apart, and connected together by means of wrought-iron transverse girders, and by a system of horizontal diagonal bracing. The bottom of the main girders were formed of two angle irons, and wrought-iron plates, eight in number at the centre, but diminishing to three at the ends, and of such dimensions as to make the effective sectional area at the centre, after deducting the loss by rivet holes, equal to 26 square inches; that of the top, which was somewhat differently constructed, so as the better to resist compression, being equal to 40 square inches. The lattices were formed of a series of bars of spoke-iron, intersecting each other at an angle of 60°, being crossed at those points by longitudinal bars, for the purpose of giving additional rigidity, and of making a closer parapet. The transverse girders, 7 feet 6 inches apart, were each formed of a plate of wrought-iron, with two angle irons at the top and bottom; these were covered with corrugated galvanised iron, 1-10th of an inch thick, upon which concrete, and then a layer of gravel and loam metalling, 6 inches thick, were laid. This bridge was erected by Messrs. Smith, Smith, and James, of Leamington, upon a platform which gave to the girders a camber of 7 inches in the centre, which was reduced to 34 inches upon removing the platform. The total cost of the bridge was about £5000.

During the progress of the works, the author made some experiments upon the strength of rivets of different sizes, from which it appeared, that the average breaking weight, per square inch of sectional area, was 35-10 tons for a chain joint, and 18-82 tons for a lap joint.

The paper announced to be read at the next meeting, Tuesday, April 30, when the monthly ballot for members will take place, was "On the Absorbent Power of Chalk, and its Water Contents, under different conditions," by Professor Ansted.

## SOCIETY OF ARTS.

APRIL 24.—WILLIAM TOOKER, Esq., F.R.S. (vice-president), in the chair.

The first paper read was on "A Plentiful Supply of Pure Water for the Metropolis, and Suggestions for Obtaining it in Abundance," by Mr. Pym. It commenced by noticing the sources from whence our present supply was derived—the Thames, Lea, and New Rivers, wells sunk to different depths in the London clay, gravel, and sand, and Artesian wells bored through the former into the chalk. The water from all these sources, except the latter, was impregnated with impurities highly detrimental to animal health and life. The chalk appeared the great natural filter for the metropolis and surrounding neighbourhood; but it was known that the basin at no season of the year contained a sufficient continuous supply for the use of the greatly-increased population of the metropolis and suburbs. The paper, therefore, proposed that a number of shafts, of considerable diameter, at regular distances along the valley of the Thames, should be sunk into the chalk; that a short canal should lead from the river's bank to the mouth of each, at such a level that, when the tide was at a certain height, the water would flow in and fill the chalk basin; a smaller shaft to be sunk a short distance from each of the induction shafts, to serve for the purpose of obtaining the water by pumping. Mr. Pym considered that the water thus conveyed below the surface of the chalk, would immediately pass through by permeation into the fissures and hollows in the chalk formation thoroughly filtered, without having remained sufficiently long to become impregnated with carbonate of lime, or other salts, generally attendant on chalk spring water; but would be a pure soft water, free from animal, vegetable, or other organic matter.

To show the absorbing, or permeative, properties of the chalk, it was stated that agriculturists, on or near the outcrop of the chalk, often sunk shallow wells to serve as drains, and which took away a large portion of useless surface-water. He proposed to partially filter the water before admitted to the shafts by perforated metal plates placed in the canals.

Some little discussion followed; Mr. VERNY admitted the ingenuity of the plan; but said, unless the organic matter contained in the Thames, and all river water, was separated before the water was passed into the chalk, the whole bed of the basin would become saturated with putrid matter, and even our present means of supply of good water spoiled.

A MEMBER called attention to the extent of ground on the chalk escarpment in Berks, Kent, &c., where the Thames flowed over it; and which he considered must fill the basin to as great an extent as artificial shafts could do; but Mr. VERNY said, the deposit of clay from the stream was so thick that infiltration was prevented; but, by filling the shafts with loose stones and sand at top, continual permeation might be secured, and the filtering substances at the top changed, as occasion might require.

A vote of thanks was passed to Mr. Pym for his interesting paper.

A second paper was read, "On the Purification of Coal Gas," by Mr. Laming—an abstract of which will be found in another column.

**THE SEWAGE OF LONDON.**—We have received a pamphlet containing an outline of a plan for removing and deodorising the sewage of London, and for applying it to the purposes of irrigation, by Mr. H. Stothert, of Bath, and is one of the plans which were sent into the Commissioners of Sewers a few months since. He proposes to intercept the whole of the sewers now existing near their exit into the Thames, not in continuous channels on each side of the river, but in eight separate series of culverts, with a large reservoir to each, at which is to be stationed a 250 or 300-horse power engine, for the purpose of forcing the water to a height of 36 ft. to obtain a sufficient hydrostatic pressure to force it through large pipes with greater velocity. These iron pipes, commencing at Chelsea and Vauxhall, are to be enlarged as they arrive at each successive engine, where the quantity of sewage will of course be greatly increased; and they would terminate in some suitable reservoir, where the sewage is to be deodorised. A number of catch water drains will also carry surface water into the culverts, which will also be provided with trap-valves opening outward for the escape of the superabundant water into the Thames during heavy rains. The author also proposes a series of canals into the agricultural districts of Middlesex, Essex, and Suffolk, for the conveyance of the deodorised sewage for distribution on the land. The estimated cost of first construction of this complicated affair of sewage removal is 748,080l., and the machinery for mixing and distributing the manure, 1,528,440l.—thus involving an outlay, by estimate, of upwards of two millions and a quarter sterling. The annual cost of working is estimated at 198,155l., including interest on capital at 4 per cent.; and the author estimates the annual profits, taking the price of the manure at 4s. per acre, which is obtained by the Sewage Manure Company at 3,081,845l. It is quite certain that no official body of men expending the public money, such as the Commissioners of Sewers, would be justified in undertaking so Utopian a scheme; but if the necessary funds can be raised by the formation of a company for carrying it out, those who subscribe to it must stand or fall by its success or failure. We, however, believe the estimates to be inconsiderate, and not to be relied on; no safe estimate can be formed for such a gigantic work, nor could markets be obtained for one-hundredth part of the produce for many years, and even eventually only at great extra cost of distribution at a distance. The estimates may look tempting on paper, but we fear the promoters and subscribers will find themselves woefully deceived. To show upon what grounds the above remark is made, that the Commissioners of Sewers would not be justified in incurring such an enormous expense, with the uncertain expectation of paying a large interest on the outlay from the sale of manure, we need only refer to the account of the receipts and expenditure of that body for 1849, just published. From this it appears that the commissioners are over head and ears in debt, owing 109,738l., of which 3000l. was borrowed during the year, 65,787l. of this sum is for money before borrowed, and 34,455l. for tradesmen's bills unpaid; while the whole arrears of rates due, a great portion of which will doubtless prove bad, is 56,172l. The total expenditure during the year was 85,345l., of which 22,400l., or more than one-fourth of the whole outlay, is for management. The entire receipts, including the above-named 3000l., were only 71,624l., and the balance in hand, which, at the commencement of the year, was 22,956l., had dwindled at its termination to 9235l. Under these circumstances they cannot adopt a scheme involving an immediate outlay of two millions and a quarter, even if clearly a practicable one, much less one which, to say the least of it, is complicated and questionable.

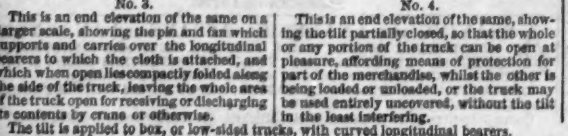
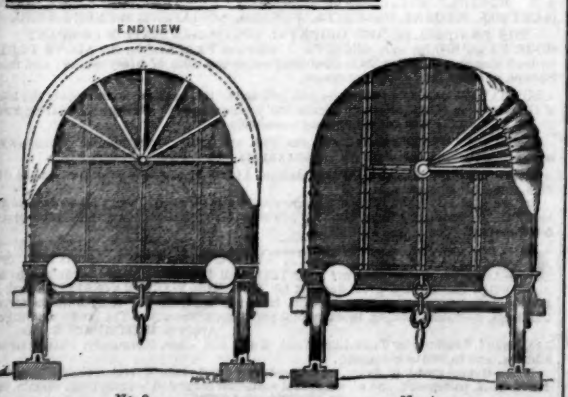
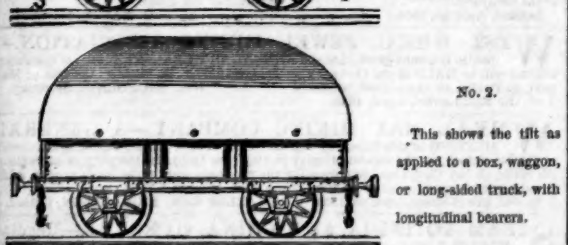
In connection with this subject, we may here append a letter, which was addressed by Mr. Franklin Coxworthy to E. H. Woolrych, Esq., on 6th March:—"Sir, The Metropolitan Commissioners of Sewers having decided, by their resolutions of the 1st, published in the Times of the 2d inst., that it is desirable to prevent the pollution of the Thames, and that they will cordially assist anybody who may have that object in view, it only remains to determine how best to carry it out; and it having been clearly shown that recourse cannot be had to machinery, in consequence of the ruinous expense, and other insuperable objections that attend its adoption, I have taken the preliminary steps to the formation of a company to collect, for agricultural purposes, the solid matter of sewage in the sewers themselves, agreeably to the principles laid down in my papers, and which are now declared by Prof. Faraday to be correct; and it is evident that the operations of such a company need in no way interfere with those of any company already in operation, whose object is the irrigation of the land with liquid sewage. To the attainment of my object, it will be necessary, as I have already explained, to construct what I have termed "discharging sewers," or, in other words, greatly to enlarge the sewers, where they discharge into the Thames, so that the dams, or pits, constructed in them shall ensure the passage of the water through them at a sufficiently slow rate to admit of the deposit of the matter of sewage held in suspension. I shall, therefore, feel obliged by my being informed, as the first point to be decided on, whether the commissioners will construct these outfalls, and let them to the company at a rental to be governed by the outlay, or whether they will cede to the company the power of constructing them themselves. Should the commissioners ultimately decide that this desirable object is to be accomplished by a company, they will, of course, hold as sacred the principles of the respective competitors; I, therefore, beg to specify that mine consists in collecting, in the sewers themselves, the solid matter of sewage, by deposition and filtration, if necessary, for agricultural and other purposes. Whatever principle may be adopted, an efficient system of ventilation for the sewers, will of course be necessary, and must be carried out by the commissioners, under any circumstances, to prevent the pollution of the atmosphere of the streets and buildings, due regard being, of course, had to those influences arising from change of electrical condition, the existence of which the recent experiments of Messrs. Fultier and Quelet so forcibly confirm."

BY HER MAJESTY'S ROYAL LETTERS PATENT.  
IMPORTANT TO RAILWAY COMPANIES, CARRIERS, AND OTHERS.  
**ROWLAND BROTHERHOOD'S TILT, for COVERING RAILWAY TRUCKS, WAGGONS, &c.**

This invention allows of trucks or waggons being covered or uncovered with surprising ease and facility, so that one porter can uncover two trucks in the space of a minute, and two can re-cover both in the same time. It allows of a small portion, or the whole area of the truck, being uncovered, and affords a great facility for loading and unloading, and protecting the goods in these operations, as well as in the course of transit. It can be secured by locks and keys, thus rendering merchandise secure from plunder. It is cheap in its construction, can be applied to railway trucks and waggons generally, and is easily attached or detached. It runs smoothly through the air at high speeds, and against head winds.

This Tilt has been in use on different parts of the broad gauge during the winter, and has been found to work remarkably well in the severest weather. Experienced and practical persons, who have the management of large goods' stations, and have seen these tilts in working, and who know the great wear and tear of cloths, tarpauling, &c., and the inconvenience of existing modes for goods' covering, are of opinion that these Tilts will be of great utility in railway service. The patentee is himself prepared either to construct or, on moderate terms, to license parties to construct his patent Tilts.

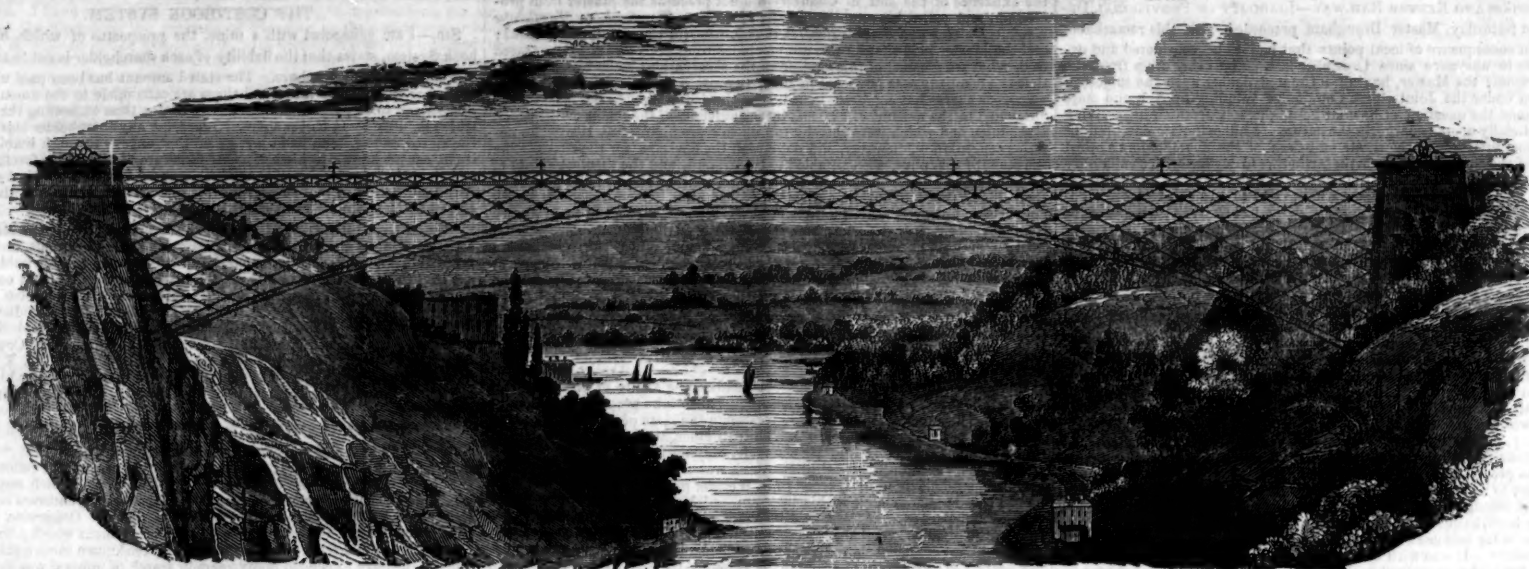
Applications to be addressed to R. Brotherhood, Railway-Works, Chippendale, Wills.



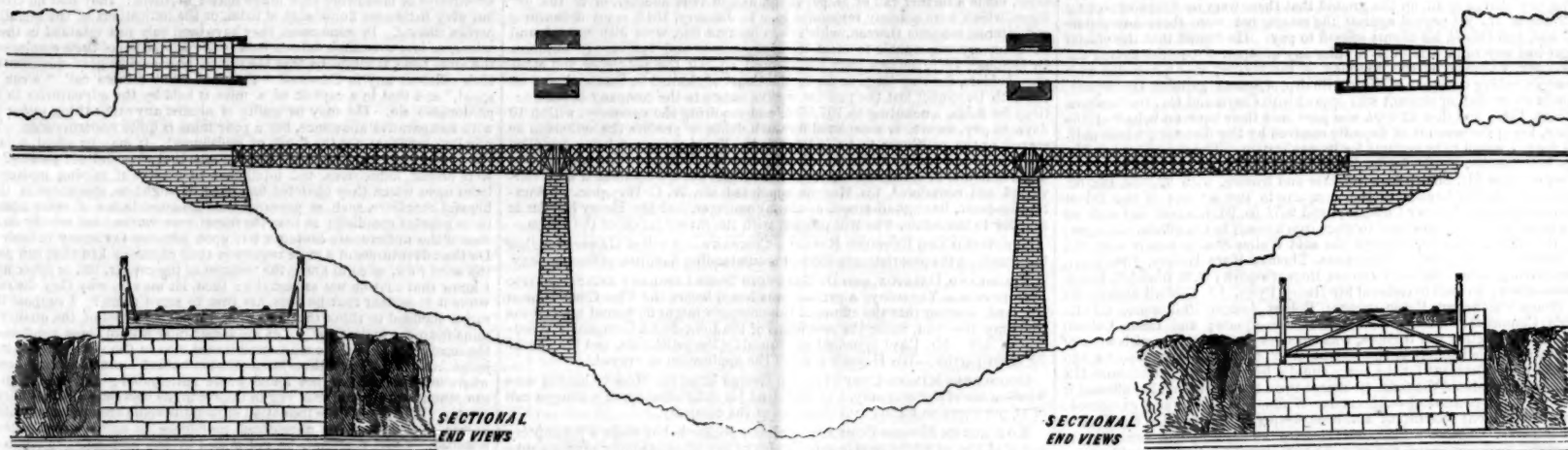
The tilt is applied to box, or low-sided trucks, with curved longitudinal bearers.



## MOTLEY'S SELF-SUPPORTING RIGID BRIDGE.



THE "RIDER" RAILWAY BRIDGE.



## RAILWAY BRIDGES—THE LATE ACCIDENT IN FRANCE.

The awful catastrophe at Angers, in France, from the fall of a suspension bridge, by which nearly 300 lives were lost, and many individuals injured, recorded in our last number, will naturally arouse the attention of engineers concerned in bridge building, particularly those of large span, and having to support great weights, such as railways, or for large public roads. Although much light has been thrown lately on the character of wrought-iron in the construction of bridges, particularly from the evidence contained in the Report of the Committee of the House of Lords, on the use of iron in railway structures, there is something to be learned from this appalling accident. On a close examination into the fragments of the iron work, it is stated that in some parts it was found *completely through*; having, in a previous account, been told that it was thoroughly repaired 12 months since, at a cost of 30,000*fr.* The question very naturally arises, from the fact that wrought-iron is comparatively a novel element in bridge building—have we had sufficient practical experience in the use of this material to warrant great and expensive outlays on railways or other works, constructions which, in a few years, will tumble about our ears from oxidation, carbonization, or other chemical or molecular change?

Mr. Fairbairn states, in his evidence before the committee, that his girder bridges of wrought-iron are so constructed that every part may be got at, and that two or three coats of good oil paint, every three years, will make them last 100 or 500 years. We know more than one practical engineer, of long experience in the changes to which wrought-iron is subject, who are of opinion that, paint as you may, a gradual deterioration, whether from galvanic or chemical change, is ever taking place in wrought-iron, particularly when exposed to the action of the elements, and that if the smallest speck is exposed, an *active* galvanic action commences between the oxide of lead, of which the paint is composed, and the iron, at the expense of the latter, it being the positive metal. It does not require any very large amount of comprehension to foresee what would be the result of a very small amount of molecular change in the iron in such a structure as the Britannia Bridge, which, although vast as a work of art, is, probably, not destined to stand a century. We do, therefore, think that engineers should pause before they incur large outlays on such works as wrought-iron railway bridges, subject not only to the passage of great weights, but more than usual vibration.

It is true, suspension bridges have never been encouraged in this country as railway bridges, and their insecurity under heavy weights appears to be generally known, from the fact that some casual passer-by advised the officers not to suffer the bridge to be crowded, but to let the soldiers go over in sections. The weather was stormy, the men were impatient, they crowded to get over, and the catastrophe ensued. The authorities of France are causing the most stringent enquiry to be made into the whole affair; a commission has been appointed, consisting of Messrs. Frissart, Drappier, Mary, and Bellanger, with M. Kermaingant, inspector-general of bridges, as president, to inquire minutely into all questions relative to the mode of construction of suspension bridges, to the proofs to which they ought to be subjected, and to suggest any improvements of which bridge building in general is capable. At present, we are totally ignorant of the principle on which the bridge in question was constructed; but, the accident has led to the foregoing remarks, which, we think, cannot be considered out of place on so important a subject as the safety of hundreds of individuals, who may in an instant be hurried into eternity.

While on the subject of wrought-iron in the construction of bridges, we here insert two forms of bridge, in which it is proposed to be employed in conjunction with cast-iron, both of which have before appeared in our columns. The first is Rider's bridge, the sides composed of a top and bottom chord, the upper consisting of two L pieces, forming a T, and the lower of two plain bars of wrought-iron; the upper chord forms an arch of cast-iron, the upright beams are of cast, and the diagonal ties are of wrought-iron. The bridge is of great strength, existing evidently in the arched top and diagonal ties, and the principle has been thoroughly and successfully tested on several of the American railways.

The other diagram is Mr. Motley's proposed bridge over the Avon, at St. Vincent's Rocks, Clifton, which he proposes to construct without any centreing. At a distance of 80 or 100 feet from the verge of the rock, a number of iron piles would be driven, united sufficiently strong to bear a strain of several thousand tons, to which powerful tension bars would be fastened, on the river end of which cranes of sufficient strength would be attached, and, by the aid of a moveable platform, the first portion of the bridge would be hung on the principle of a suspended bracket; this would continue to be enlarged in length and depth, and as the work would commence on both sides simultaneously, the bridge would meet in the centre and its perfect rigidity be effected. The cost of the iron work of such a bridge, we understand from Mr. Motley, for a span of 600 ft., to sustain a uniform load of 1000 tons, with perfect safety, would not exceed 30,000*l.*

and be nearly as rigid and stable as a ponderous cast-iron structure, and in which may be placed greater confidence, both as to economy and security. [Models of these bridges may be seen at our office.]

Mr. Andrew Smith has also a plan for constructing a bridge of wire-ropes over ravines without centreing, strengthened by wrought-iron supports and tension rods, which, with sufficient weight of metal, might doubtless be made strong enough for railway purposes—the only question still being as to the liability of wrought-iron to deterioration, under any circumstances.

While on the subject of bridges, we cannot help alluding to the extraordinary proceedings of the Prussian authorities, with respect to the proposed bridge across the Rhine, at Cologne, so disgracefully behind the spirit of the age, and so indicative of a gross job. In the *Mining Journal* of the 13th inst., we stated that a public notice had been issued, inviting engineers of all nations to send in plans for a chain bridge, not to unite the Cologne and Deutz stations, and allow of the passage of trains, but so constructed that the carriages and waggon may be drawn over piecemeal, the excuse being that the gradients will not allow a locomotive to pass.

In the *Times* of Wednesday last appeared a letter from Mr. Fairbairn, to Baron Humboldt, on the subject, in which he expresses his regret that so unfortunate a decision should have been come to by the authorities at Berlin. It appears Mr. Fairbairn was consulted by the Prussian Government, and proposed the construction of a wrought-iron tubular bridge, similar to the Britannia and Conway bridges, which should be equal to the heaviest trains at any velocity, or might be packed with military and ordnance, giving an entire strength equal to 24,000 tons. The plan was approved by the king, strongly recommended by Baron Humboldt, and all but adopted by the Government. It so happened, however, that one Oberbaurath Lentze simultaneously sent in a plan for a suspension bridge; a commission, consisting of Lentze himself and another, was appointed to visit the English bridges and report; which he did, of course recommending his own, which it appears the authorities, headed by M. Van der Heydt, the Minister of public Works, are determined to adopt, and thus establish a continual hindrance, instead of facilitating railway transit, at this important point of European travel. Mr. Fairbairn well, and truly, observes, "And now let me point out the lamentable imperfections which characterise the Ministers' programme, and the limitations and requirements which will effectually trammel the efforts of men of genius, and deter those of experience and reputation from entering at all upon the competition. It is an express condition of the scheme that the railway communication is not to be continuous, and the public will, therefore, continue to suffer the annoyance and inconvenience of considerable delays; for it may be safely said that the proposal of disintegrating a train at one terminus, and drawing it across to the other by men or horses, bit by bit, or hour by hour, will offer equal, if not greater, obstacles to a rapid journey than the existing system does. How much better would it be that the bridge should embody within itself such elements of strength and durability as would afford at all times, and in all seasons, a safe transit to those means of locomotion which constitute the wonder and glory of the age? Instead of such a permanent and substantial structure, will the Prussian Government sanction the erection of one, the feeble and rickety constitution of which would shudder at the very sight of a locomotive? Surely not! Public opinion must step in and forbid it. What is wanted is a bridge to connect the existing railways, not one that will permanently separate them—a permanent, inflexible, durable, and handsome bridge, of enormous strength adapted to give every facility to the navigation, and carry the heaviest weights, which may be constructed within the sum stated for the chain bridge." It is further stated that the objection about the gradient is quite imaginary; that it would not be so severe as many now worked with ease in this country. On the left bank of the Rhine the terminus of the Aix-la-Chapelle line is at the right level, and that on the side at Deutz may, without difficulty, be reached by an easy gradient of less than 1 in 100. Europe is interested in the facilities for rapid transit in the chain of lines through Prussia, and it is not to be endured that a clique of the bureaucracy of Berlin shall be allowed to perpetrate so barbarous a job, and erect a structure so behind the spirit of the age. M. Van der Heydt, as far as words can be allowed to convey an intimation of a genuine conviction, acknowledged at the Palace, on the 1st of November last, that no structure should ever be allowed to cross the Rhine which was not calculated to meet with perfect security the utmost requirements of the most extended traffic, and the possible contingencies of great military operations.

A beautiful brass model of a railway truss, or other bridge, was exhibited by Mr. Robert Jones at the Liverpool Polytechnic Society. The sides, and also a division in the centre longitudinally, comprises a number of wheels, or perforated circles, giving great strength. The bridge at the top of the sides and centre piece forms a segment of a circle, and the same is formed below the roadway—the segment being inverted, and the circles decreasing in size from the centre, or largest circle, towards the ends. This bridge may be erected without scaffolding, the wheels forming the sides, and the structure itself being supported below by chains, and the top part above the wheels being strong bands or iron railing over the wheels.

RAILWAY ACCIDENTS.—A return relative to railway accidents has been published, from which it appears that the total number of persons killed on all railways open for public traffic in the half-year ending December 31, 1849, was 106. Of these 73 were killed owing to their own misconduct or want of caution, 11 being passengers and 62 servants of the company; 28 were trespassers, killed by improperly crossing or standing on the railway; 1 was a child, killed by an engine running off the rails and entering a house, and 2 were suicides. Of fatal accidents, arising from causes beyond the control of the victims, only two have occurred, and those are among the servants of companies or contractors. Of the persons injured owing to their own misconduct or want of caution, 10 were passengers, and 87 servants of companies or contractors; and of those injured from causes beyond their control, 54 were passengers, and 3 companies' servants. Seven persons were injured by improperly crossing or standing on the railway, who were neither passengers nor servants of the company, and one child was injured by an engine running into a house. The total number of passengers conveyed during the period referred to in the return was 34,924,469. The number of miles of railway open at the beginning of the half-year was 5447, and the number open at the end was 5996, being an increase of 549 miles during the half-year.

## ACCIDENTS.

**Todmorden.**—As S. Crowther was working in Kilnhurst Quarry, a mass of earth fell, and fractured one of his legs.

**Bury.**—W. Sutcliffe, aged 8 years, was killed by the falling of a stone, in a colliery at Bolding Stone, Walmesley.

**Gateshead.**—G. Gallon, having been thrown from a tramway in the Cramlington Colliery, fractured his skull, and died.

**Milton Prose Works.**—W. Jukes, stocktaker, was severely injured by the falling of a portion of the roof.

**Dudley.**—Joseph Pritchard was killed by the accidental fall of a piece of coal from the roof, while engaged at work in a pit connected with the New British Iron Company's colliery. A boy, four years and a half old, named Solomon Furman, met with his death by falling from a trolley wagon, on to which he attempted to get while it was being drawn by a horse along the tramway belonging to the same company. The head of the unfortunate lad became entangled with the wheels of the wagon, and broke his neck, producing almost instant death.

**Bilston.**—Mary Ann Fletcher, about 10 years of age, was playing with some other children near to a gin upon a pit bank near Pothouse Bridge, when the gin started, without being touched, went round with great force, and knocked her down, by which she received a severe blow and cut upon her head, from the effects of which she died. The father of the deceased had a short time previously fastened the gin shaft against a hotel, and left it, as he thought, in a safe state, but requested the children to leave the gin ring whilst he ran after a man to ask him to assist in winding a skip up.

**Wiltshire.**—Thomas Jones was killed by a large quantity of coal falling upon him from the roof of a pit at Banker's Hill, whilst assisting another miner to put up a tree in the workings. He was pulled out from under the first quantity of coal, but a second quantity immediately fell, when he received the injuries which terminated in his death a few hours afterwards.

**Bolton.**—Moses Tatlock was killed in a coal-pit at Pilkington, belonging to Messrs. Brownhill, Bromilow, and Co., on Wednesday. Tatlock had been employed in laying pipes in the mine, to carry away foul air, and was ascending the shaft in company with James Percival, when, 30 or 40 yards from the bottom, he fell out of the tub. He was shortly afterwards taken up dead. It appears he was a person of weak constitution, and the foul air had affected him. Just before falling, he called out to his companion, "I'm going!" but the latter, having his back towards him, could not catch him in time to prevent his fall.

**Cadoxton.**—A serious accident occurred at the colliery of Messrs. Richards and Glasbrook, near Cadoxton, to a lad named Jenkins: as he was coming out of the level, a large stone, weighing upwards of a ton, fell in such a manner that it grazed his shoulder, and passing down the leg, actually tore off the clothes and skin. The poor fellow is now, we hear, doing well.

**Wolverhampton.**—Enoch Harper was so severely injured by an explosion of gas, in a stone pit at the Wolverhampton Colliery, that he died, after lingering some days. The pit was tried before Harper went to work and declared free from sulphur, but the witness examined at the inquest stated that it was not well ventilated. —*Wolverhampton Chronicle.*

**Melton Field.**—Moses Garfit, who worked in the Gin Pit, occupied by Mr. John Birks, of Homingfield, entered a "bank," or old working, with a lighted candle, to fetch some tools for a miner under whom he worked. There appears to have been a considerable accumulation of inflammable gas in the place, for no sooner was the naked flame introduced than an explosion took place, by which Garfit was so severely burned that he subsequently died. —*Sheffield Iris.*

**Crook.**—As James Kelly, with his mate, Barnard Hardy, were employed in taking the small coal in tubs up an incline to the coke ovens, at Bitchburn Colliery, on coming down the incline with an empty tub, Kelly was riding upon the fore-end of it, and Hardy followed, having hold of it. One of the incline plates suddenly rose up, and the tub struck against it, started off the way, and fell from the platform upon the kiln. Kelly fell over on the ground beneath, and the tub fell off the kiln, and hit him upon the head. He never moved after. Hardy, on getting to the edge of the platform, recovered himself, and received no injury. The gangway had not been in very good order, and similar accidents have occurred before, but not of so serious a nature. —*Durham Advertiser.*



## COMPANIES PROCEEDING UNDER THE WINDING-UP ACT

**DIRECT LONDON AND EXETER RAILWAY.—LIABILITY OF PROVISIONAL DIRECTORS.**—On Saturday, Master Brougham proceeded with this remarkable case, which, in consequence of local points that had to be considered and decided, has been in abeyance since December last. The delay arose from the fact of his Honour, the Master, having intimated doubts upon the subject of his jurisdiction under the Joint-Stock Companies' Winding-up Act, and more particularly upon the question of how far he might be warranted in receiving and acting judicially upon a charge, in the nature of a bill of indictment, brought in by the official manager to the estate on behalf of the shareholders against the directors of the company; and further, whether in dealing with the liability of the directors in connection with the charges of fraud brought against them by the public officer under the Act—on whose right to do so he had also to determine—the charge should be proceeded with against them in their collective capacity, or individually, or in both.—Mr. Vallance appeared for Mr. Wright, the official manager; Mr. Bagshawe for Mr. Shairp and other directors; Mr. Brace for Mr. Chambers and others; and a very protracted argument took place. His Honour now decided that the official manager, as the public officer representing the estate, was the proper party to prefer the charge, and not individual shareholders, otherwise there might be 1100 different applications, and as many issues to be tried. The case must now proceed as in the nature of charge and discharge. If the official manager charged the alleged wrongdoing director with receiving or paying money, and that director did not properly account for it, the official manager would be justified in getting the money back again on making out a case, and on the money being duly paid into the bank, the court would proceed with its equitable distribution among the shareholders. It was the duty of the directors to account for what they had done with the money, and to discharge themselves from the allegations of the official manager on behalf of the shareholders. Each director was a trustee for the whole body of proprietors. The £2,000, the directors received as deposit was a debt in trust, to be accounted for, and the money, whether got fraudulently or not, did not belong to them. If the official manager to the estate could not bring them to book, he did not know who could; and it was not assumed that the company was so far bottomed in fraud as that the directors were unable to discharge themselves. It was with his concurrence that the official manager now brought in a fresh charge against each individual director, as regarded his own acts and deeds, with the alternative of making each one liable for the gross amount of money received. Mr. Bagshawe, for Mr. Shairp, contended at great length that the official manager had no jurisdiction, and objected to that officer bringing any charge at all, on the ground that there were no debts, excepting a small one of 7L, yet proved against the estate, nor were there any claims established, and this 7L his clients offered to pay. He denied that the official manager had any right whatever to raise any question of equities among the parties. Mr. Vallance, at the direction of the Master, then proceeded with the charges, taking first that of Walter Shairp, of Sussex-gardens, Hyde-park. He should show that an account was opened with Currie and Co., the bankers, in October, 1845, and that £2,000L was paid into their bank on behalf of the company, being the amount of deposits received by the directors, whose individual duty it would be to account for its application. The charge against Mr. Shairp individually, confirmed by his Honour, was as follows:—The official manager charges Mr. Shairp as a director and trustee, with £2,305L 12s. 6d. deposits paid into the bank of the company to the account of the Direct London and Exeter Railway Company, and 967L 0s. 9d. interest, and calls on him to account for the same, and to discharge himself to the official manager; or he, the official manager, charges the said Walter Shairp jointly with the other members of the finance committee, Thomas Piers Healey, Elm-court, Temple; George Evans, Milbury-terrace, Regent's-park; E. S. Blundell, Lower Seymour-street; Brigadier-General Sir Henry Pynn, 19, Clifford-street; Sir John Bruce Chichester, Eaton-square; Robert Joseph Phillimore, D.C.L., Doctor's Commons; William Spicer, Portman-square; and Lieut.-Colonel Hodgson; as directors and trustees, with cheques drawn by him with some of the above upon the bankers to the extent of £214L, part of the deposits, and calls upon him, to account for the same, and discharge himself therefrom.—His Honour having entered the form of charge upon the record, and confirmed it as the course of proceeding—Alexander White was sworn and examined: Deposed that he was accountant and book-keeper to the London and Exeter Direct Railway. Messrs. Currie and Co. were the bankers, and according to the bankers' book produced, the gross amount received to the credit of the Direct Exeter Company was about 31,000L. The cheques produced bore Mr. Shairp's signature, in conjunction with others. The cheques for 500L paid to the finance committee was in Mr. Shairp's handwriting. Could not say on whose authority the account was opened.—Mr. Vallance: An account was opened, and we have the letter in Mr. Shairp's handwriting. The 500L was paid for buying shares, in other words for "rigging the market," and there was a witness to prove this in the room. Mr. Bagshawe then said that if it was intended to charge Mr. Shairp with this 500L, criminally, he must crave time to see the books and papers, and either to bring in his discharge with the consent of his client and the other directors, or to appeal from the Master's decision in favour of the right of the official manager to exercise this jurisdiction under the Act.—His Honour, the Master, granted the application.

**BRIGHTON, LEWES, AND TUNBRIDGE WELLS.**—A further meeting was held on Friday before Master Sir W. Horne. Mr. Daniels appeared for the official manager, and produced all the scrip books printed for the company, as they were sealed up for safe custody by one of the directors in 1846, from the Secondaries-office, in which they were then placed for security, and it appeared by the evidence of Mr. Potter, given before the Master, that the allotment by him was at the request of some gentlemen of the allotment committee, to parties whom he considered eligible, without any knowledge on his part of the number of shares previously allotted. The Master (Sir W. Horne) stated that the evidence of Mr. Potter was perfectly satisfactory, and removed all objections raised as to the liability of allottees, and Mr. Haynes was to be retained on the list of contributors. Mr. Potter then complained of the way in which his name had been used, and the imputation made against him in the report of the former meeting, which the Master stated could not be justified by anything that passed before him.

**MADRID AND VALENCIA.**—On Saturday proceedings took place before Master Blunt with a view to ascertain what had become of the funds of the company, 104,000L, having been paid on 52,000 shares by the shareholders, and for that purpose Mr. Chadwick, the managing director, was summoned to attend and give evidence, but it was stated that he was unable to attend through illness, although Mr. Rose, the witness, stated that he had seen Mr. Chadwick at several intervals on the day before (Friday) attending to his ordinary business, up to 8 o'clock in the evening. He was then ill. It appeared that attempts had been made to serve Mr. Fowell, the secretary, with a summons to attend, but without effect. Mr. Waley, a director, stated that 10,000L of the company's fund, about three years ago, was lent to the South-Western Company, and he understood that a portion of that sum had been paid back. He did not know anything about the funds of the company since that time. He could not extract from the trustees of the company where the funds were; they had for a long period treated him with all the indignity they possibly could. During 15 months the direction excluded him from their councils. The trustees were Messrs. W. Chadwick, Pocock, Capper, and Knill. He could not give the official manager any information where to lay his hands on any portion of the funds of this company. Had not been inside the office for a year. About a year ago a proposal was made to pay back to the shareholders 1L per share, and 2s. more for expenses to those who had placed their interests in Messrs. Child and Wire's hands. No intimation was given where the funds to do this were to come from. Mr. D. Whittle Harvey had a large amount of shares taken out of his hands by an arrangement with Mr. Chadwick, and it was supposed Mr. Harvey was paid 2500L. It was finally agreed that Messrs. Capper, Pocock, and Knill, trustees to the Madrid and Valencia Company, should be summoned, and Messrs. Morgan and Harding, of the South-Western Railway, that Mr. Chadwick should be re-joined, and a certificate of service on Mr. Fowell, the secretary of the company, given. The enquiry was then adjourned, and was resumed on Wednesday, when Mr. Fowell, the secretary of the company, was examined at considerable length, and intimated his desire to give every information in his power, but inasmuch as the Master exercised an authority unknown to the higher Courts of Chancery, prohibiting the presence of the press, but permitting that of "the parties interested," it may be stated that the general result of the examination disclosed the fact that all the property of the company, books, papers, and funds, appeared to have got into the possession of Mr. William Chadwick, one of the directors, and that nobody else knew anything of them. Mr. James, of Basinghall-street, appeared for Mr. Norris, the interim manager, with Mr. Palmer, as counsel; and Mr. Glasco, who appeared for Mr. Chadwick on Tuesday, produced affidavits and certificates from Dr. Blundell and other physicians, to the effect that in consequence of severe illness Mr. Chadwick was unable to appear for the present; and this was confirmed by a report from the interim manager, who states that he had been to Mr. Chadwick's house at Forest-hill, and had found that such was the case.

**SHROPSHIRE MINERAL RAILWAY COMPANY.**—Thursday being the day appointed by Master Kindersley for receiving proposals for the appointment of an official manager, the office was crowded by parties interested. Mr. Glasco, Mr. Egan, and other counsel, with a host of solicitors, appeared for various parties; and the Master was occupied a considerable time in receiving and discussing the testimonials of the various parties proposed for manager; and many warm remarks were made relative to the company generally, whose affairs, in addition to the proceedings under the Winding-up Act, has also been for some time the subject of a Chancery suit, still pending. One of the solicitors objected to almost all the parties proposed, on the ground of their not being shareholders, or contributors; and read some sections of the Acts in support of his objection. The Master, however, took a different view of the statutes; and said, out of upwards of 100 railway cases, he did not think in any case a contributor had ever been appointed; indeed, the constant practice of the Masters showed the contrary. It was also urged that the Master should

stay all proceedings under the Winding-up Act, until the suit now pending against the directors had been decided. Mr. Glasco and Mr. Egan argued that the existence of the suit in Chancery did not preclude the Master from proceeding, and called his attention to the case, *Exp. Trustee, re Marylebone Bank, 1 De Gex and Smal's Reports*, p. 585, wherein the point was decided; and the Master held that he was not precluded from proceeding. It appeared from what we gleaned of this case, from the observations made by Mr. Egan, that the company was projected in 1845, to raise a capital of 850,000L, and numerous shares having been issued, and the deposits paid, the market was "rigged" to the amount of 22,000L, by the purchase of the shares on the Stock Exchange, and which were thereby run up to a premium of 22. 10s. The nefarious speculation, however, did not enrich the devisers, for the shares, like the stone of Sisyphus, soon tumbled to the ground, and the astute efforts of all the "stags" have not been able since to resuscitate them. The projectors then offered the shareholders a dividend of 12s. each. Some accepted the offer; others, however, feeling indignant at the scheme, filed a bill in equity for the recovery of their deposits; and one of the contributors also presented a petition, and obtained an order against the company, under the Winding-up Act.—The Master, after most patiently hearing counsel, solicitors, and proposers (all haranguing almost simultaneously), deferred his decision on the matter until Thursday next, when it will be announced who is appointed the official manager.

**HOLYHEAD AND PORT DYNLLAEN.**—Petitions have been presented by the shareholders to the Court of Chancery to have the affairs of this company investigated and wound up.

**ROYAL BANK OF AUSTRALIA.**—On Thursday, the affairs of this company came on before Master Richards, who proceeded to take proposals for the appointment of an official manager, to investigate the state of the liabilities and assets. There were seven proposals. The petitioner, Mr. Latter, of Edinburgh, proposed Messrs. Barstow and Masson; Mr. Maynard, of the firm of Crowder and Maynard, proposed Mr. Quilter, which was supported by Mr. Farquhar and the shareholders in his interest; Mr. Webster proposed Mr. Maitland, supported by the shareholders in his interest; and Messrs. Wryghte, Goodchap, Begbie, and Hutton, were proposed by shareholders who had taken no active part in the affairs. The bank was established in 1840, under a Deed of Settlement, and out of 20,000 shares, 4500 were taken. In 1840, and the two following years, the directors made calls to the extent of 10L per share, and borrowed 300,000L upon debentures, of which the Union Bank, the Edinburgh and Glasgow, and North British Insurance, and others, claim to be holders. In 1847 these debentures began to fall due, and the directors, being unable to pay the same, made a further call of 5L per share, and in 1848 another, of 2L 10s. per share, which were scarcely responded to. In January, 1849, many debentures and interest coupons thereon, which then became due, were dishonoured, and the company was unable to meet its engagements and continue its business. In October, 1849, actions were commenced against the petitioner and other shareholders, for very large sums, in the Court of Session in Scotland, and on the 20th December last the petitioner gave notice to the company of such actions for debts, amounting to 107,569L, and requiring the company, within 10 days, to pay, secure, or compound for such debts, or procure the actions to be stayed, or the petitioner to be indemnified. These terms not being complied with, an order was issued for the winding-up of the affairs. After a discussion of three hours, in which the merits of the various parties nominated were canvassed and considered, his Honour appointed Mr. W. C. Wryghte, of Sambrook-cour, Basinghall-street, as official manager, and Mr. Henry Harris as solicitor to the estate, who will proceed with the investigation of the affairs.

**SHEFFIELD AND RETFORD BANKING COMPANY.**—A call of 11L per share has been made on the proprietors to defray the outstanding liabilities of the company.

**KINGSLAND, DALSTON, AND DE BEAUVOIR TOWN LITERARY AND SCIENTIFIC INSTITUTION.**—Yesterday, a petition was heard before the Vice-Chancellor of England, praying that the affairs of this company might be wound up, and the company dissolved, under the provisions of the Joint-Stock Companies' Winding-up Act. Mr. Egan appeared as counsel for the petitioners, and Mr. Clarke for other parties.—His Honour granted the application as prayed.

**GODOLPHIN MINING COMPANY.**—Sir George Rose, the Master charged with winding-up of the company, has intimated his determination of making a call of 4L per share on all the contributors of the company.

**KILBRICKEN MINING COMPANY.**—Master Richards has made a peremptory call of 1L 10s. on 1300 shares in this concern to pay off outstanding engagements.

## REGISTRATION OF JOINT-STOCK COMPANIES.

The report of the Registrar of Joint-Stock Companies for 1849 shows that number of companies provisionally registered during the year was 165, and that the number completely registered was 68. Amongst the latter were 14 assurance companies, 13 gas companies (including the Imperial City of Rome and Italian Gaslight and Coke Company), and four mining companies. Amongst the number that were merely provisionally registered were the various impostures got up for gold mining and trading in California. There appears also to have been an English and French International Association, a Texian and Sonora Gold Mining and Location Company, a Great Anglo-Pacific and Atlantic Ocean Junction Company, a British Great Central American Ship Canal Company, a Bread-Machine Company, a Paragon Paint Company, a Metropolitan and Provincial Illumination Improvement Company, an Absolute Security Life Insurance Institution, a Provident A.I. Mutual Insurance Association, and a multitude of others, with equally attractive titles.

The companies who have failed to make any return of the appointment of auditors, or of a report by an auditor or auditors upon their accounts during the year, are the following:—Swansea Vale Railway, National Glass of Ireland, Amman Vale Iron and Coal, London and County Railway and General Investment, Birkenhead Commercial Loan Society and Savings Fund, London and Manchester Glass, Hallett's Atmospheric Railway and Canal Propulsion, Dublin and Kingstown Coal Consumers, Commercial Joint-stock Loan and Discount; Madras, Nellore, and Arcot Railway; Lancashire, Yorkshire, and Newcastle Coal; Manchester, Sheffield, and Midland Junction Railway; Barrow Range Mining, Royal Irish Railroad Carriage, St. John's Equitable Loan Society, Nenagh Gas Consumers, Kingsbridge Flour Mills, Wylam's Steam Fuel, Burnley Cotton Twist, Banwen Iron, Ely Fairs and Cattle-market and Corn Exchange, Chester-le-Street Gas, Compressed Air Engine, Metropolitan Joint-stock Conveyance, Drogheda Steam-packet, British and Foreign Gaslight and Meter, Economic Conveyance, Merionethshire Slate and Slate Slab, League Bread, Royal Thames Steam Navigation, General Commission Ship Loan and Insurance, Gainsborough Cemetery, British Exchange, Brighton and Continental Steam-packet, Port of London Shipowners' Loan and Assurance, Birmingham Union Coal and Coke, People's Assurance, Hemp and Flax Manufacturing, British Loan, Hibernian Fisheries Association, Melksham Market, Torbay Steam Flour Mill and Ship Biscuit Manufacturing, Lurgan Gas, Worcester Corn Exchange, United Traders' Life Assurance and Endowment, Kilkeny Gas, London Commercial Exchange, Traders' Investment Loan and Discount Association, Sunderland Subscription Gaslight, Wymondham Gaslight and Coke, Preceptors' and General Mutual Life Assurance, Seaham Gas and Coke, Gravesend and Milton Gaslight, Iuce Hall Coal and Canal, Independent Life Assurance, Adelaide City and Port Railway, Quenagen Mining Association, Workshop and Radford Gaslight and Coke, Limerick Gas Consumers.

**LOCOMOTIVE-ENGINE.**—Mr. T. Perkins, of Baltimore, has invented an improvement in the boilers and water-heaters of locomotive-engines, consisting of a mode of heating water to supply the boilers, and in constructing the parts of the boiler, in such manner that he protects the smoke-box, and employs the waste heat to advantage. The patentee claims, "the branch exhaust-pipe, surrounded by a water space, combined with the ordinary exhaust-pipe, so that a portion, or the whole, of the steam may be directed through either pipe, the whole being constructed substantially in the manner and for the purpose herein described; also, the water case surrounding the smoke-box, into which the supply water is forced to be fed into the boiler, by which I effect the double purpose of heating the water by the waste heat before it enters the boiler, and also protect the smoke-box from destruction by the intense heat of the flames and cinders."

**RAILWAY CARRIAGES.**—Mr. J. Knight, of Baltimore, has patented some improvements in trucks for railway cars, with a view of dispensing as much as possible with the conical form of the wheels, and at the same time to enable the cars to pass around the curves of the road with less friction and loss of power than upon any plan heretofore used or known; and also to enable cars of great capacity to be built upon a plan much more simple, cheap, and safe than heretofore.—Mr. Knight claims the "connecting and combining, in the carriage for carrying barthenes and passengers upon railroads, one or more intermediate pair of cylindrical wheels, or wheels nearly cylindrical, without flanges, loose upon their axles, or otherwise independent in their action, so that any one of these intermediate wheels may revolve faster or slower than the others, in connection with guide wheels having one or two flanges, they being made fast to their axles; and also, either for a six or eight-wheel car, all the wheels of the same carriage, both fast and loose on their axles, being attached to one and the same stiff frame, by means of spring and bearing boxes, or otherwise. This combination in a railroad carriage, as above described, I claim as new and of my own invention; I do not, however, claim cylindrical wheels on separate frames, made fast to, and revolving with, their axles, these having been used in steam locomotive engines as drivers, but I do claim the loose or independent wheels without flanges, in connection with guide wheels having flanges, and the attachment of the wheel to the one stiff frame, as above described."

**BELFAST JUNCTION RAILWAY.**—On Wednesday Sir John McNeill made an experimental trip on the railway from Dundalk to Newry. The engine and some waggons advanced on the line four miles north of Dundalk, to which extent permanent rails are laid. It is expected that the line will be opened to the Dublin-road, about half a mile south of the Wellington Inn, in the end of May.—*Newry Telegraph.*

## Original Correspondence.

## THE COST-BOOK SYSTEM.

SIR,—I am connected with a mine, the prospectus of which, on the Cost-book System, states that the liability of each shareholder is not to exceed a certain stated amount per share. The stated amount has been paid up, and a call of 5s. per share more also; and there are calls made to the amount of 1L per share more, to be paid on or before stated dates, thus exceeding the prospectus-stated liability by 1L 5s. per share. Supposing any shareholder objecting to pay the stated excess, or to be in arrears of that excess, through inability to meet it (by causes known to himself), can forfeiture of shares be forcibly imposed, or any of the original signed conditions imposed for arrears of that excess, &c.? Any information on that subject may be of service to many, and thankfully received by one who feels the smart.—K. Q. X.: April 23.

[Under the Cost-book System, as we have so very often before stated, the accounts are made up every two months or other stated periods, and either the profit divided, or the loss ascertained and apportioned to each holder of shares, *pro rata* to pay. We do not think the original statement, that only a certain sum should be spent, at all affects the matter, as circumstances might have arisen which would have rendered it highly inadvisable to abandon the mine to avoid a trifling call. Forfeiture of shares, under the Cost-book System, cannot legally take place, without an order from the Stannaries Court—or, perhaps, the Court of Chancery. We see no remedy for "K. Q. X." but relinquishing his shares, paying his share of liabilities, and claiming his proportion of assets, which every adventurer can do under the Cost-book System.]

## "A GOOD BAL MAKES A GOOD CAPTAIN"

SIR,—Amongst the numerous Cornish adages, we hear that "a good mine makes a good captain." It will be seen, upon a very slight reflection, that it is a joke, for it is not true that a good mine does produce such result; yet it is a fact, confirmed by general observation, that most adventurers act as though they possessed a firm faith in the truth of the saying. Otherwise, how can you account for the popularity, patronage, and employment which accrue to a captain upon the discovery of a rich mine? I have known some instances of mine agents who have expended many years in search of mineral wealth; they have gone from one poor mine to another (perhaps, to the amount of half-a-dozen) in unavailing labour, except that they have had a small salary, just sufficient to keep them above the grade of the mine labourer. During these years, no adventurer or landowner took much notice of them: they had no credit—or but very little—for knowledge of lodes, or the indications of the metallic properties thereof. In some cases, they have been only just retained in their situations, so low were their talents held in the estimation of their employers. At the same time, it might be that these men possessed as good qualifications for their office as any in Cornwall. They had what miners call "a run of bad speed," and that in a captain of a mine is held by the adventurers as the unpardonable sin. He may be guilty of almost any other thing under the sun with comparative allowance, but a poor mine is quite unpardonable. What a blinding influence has the spirit of selfishness! It may be asked, what could the adventurers have required of these men that they did not possess? They were honest, industrious, and intelligent in respect of mining matters. The lodes upon which they operated furnished, it might be, specimens of the most hopeful character, such as procured the recommendation of other agents of a more popular standing; so that the mines were worked not merely on the advice of the unfortunate captains, but upon conjoint testimony in their favour. Do the adventurers of a mine require in their captain a ken that can penetrate the solid rock, so as to know the location of the copper, tin, or other mineral? I know that they do not expect this; then, let me ask, why they distrust him, while it is evident that he does his best to serve them? I suppose they are rather inclined to think that he ought to have judged of the quality of the mine from the indications. Let me respectfully inform these gentlemen, that the most learned and the most experienced men in the world cannot infallibly judge from symptoms; they have all been baffled—metals having been found where unexpected, and not found where anticipated; and that man is presumptuous, who would lead you to believe in the doctrine of infallibility in this matter. The laws of the formation of metallic veins are not as yet sufficiently known to justify giving unreserved confidence to any system hitherto propounded. I say, therefore, be not misled by any pretenders to occult science. No theory of the formation of lodes, or the indications of their metallic properties, can fairly deserve your confidence until it is tested in numerous cases, and that with unvarying success. I do not say that symptoms go for nothing; far be it from me; for that would be as much as to say that all land is equally eligible for mining, which is not true; but I mean that symptoms are not always realised.

But no sooner does one of those captains happen to hit upon a good lode, than confidence in his judgment as a miner is manifested from all quarters. The adventurers are delighted; they give him a most cordial shake of the hand, almost equal to that of a Member of Parliament to his constituents on the day preceding that of his election. He is invited to neighbouring mines, as visitor, inspector, reporter, and manager; and while the mine so fortunately becoming rich continues to yield a good profit, he is caressed and patronized as though he was the giver of the dividends, instead of the accidental instrument of their origin. If, however, it should so happen, as it often does, that the same mine becomes poor again, and continues so for some years, and every other mine under the captain's management likewise happens to be poor, you will find patronage on the wane; and in the end, despite advance of knowledge and experience, he is esteemed as an ordinary man again. He is no longer considered fit to manage or report on mines, and he probably dies in neglected poverty. So fickle a thing is man!—R. S.: *Truro*, April 12.

## CWM ERFIN MINING COMPANY.

SIR,—I have not before this had time to attend to Mr. John Taylor's, jun., letter, in your Journal of the 23d March, with respect to the management of this mine; but since I see his report upon it, in your Journal of last week, I will take the liberty to comment upon both together—killing thereby, as the old proverb has it, "two birds with one stone." The length and value of the ore ground in Cwm Erfin is very much as I have stated it. The western ore ground is from 20 to 25 fms. long, yielding a ton to a fathom; and the eastern ore ground is from 20 to 30 fms. long, yielding, on an average, 2 tons to a fm. In the present day, I do not think that it is generally considered unfair in mines that can be sunk 2 fms. in a month to exhaust 1 fm. in depth per month for the length of the ore ground. Taking this for granted, the western ore ground being 25 fms. long, and yielding a ton to a fathom, is capable of yielding 25 tons per month; and the eastern ore ground being 25 fms. long, and yielding 2 tons to a fathom, is capable of yielding 50 tons a month, or, together, 75 tons—I speak from having examined the ore ground before I bought my shares. I do not know upon what sort of information Mr. Taylor relies; but I undertake to prove it to be most innocent of the true state of the mine. Mr. Taylor says, with a triumphant sort of a feeling, "Surely he (the 'Shareholder') cannot be aware that the western course of ore is all but exhausted down to the depth of the bottom level, and a little of it taken up under that." I certainly am not aware of this. I am aware that, for all that is known to the contrary, this ore ground stands whole to the surface; and it would have been as well, if before Mr. Taylor came to the conclusion that the 'Shareholder' was so 'grossly deluded,' he had taken the trouble to ascertain that the 10 fm. level had not touched this ore ground at all—a piece of intelligence that he would have set him right as to the true value and state of the mine; and he himself would then have been aware, as I now am, that the western ore ground is not exhausted, but that, on the contrary, it remains whole from 7 fms. above the back of the 20 fm. level to the surface. Managers of mines ought to study a little, and to correct their opinions by means of the dial—an instrument too seldom resorted to—instead of unaided imagination. They, too, ought not to be too fond of riding a hobby. Mr. Taylor goes on to say, with his accustomed foregone conclusion against steam-engines in Cardiganshire, that, as to a steam-engine, I would say that I hope that this outlay may be avoided. The ore ground now at command will certainly not warrant it. Now, what would be the cost of a steam-engine to draw and crush all the stuff in the Cwm Erfin Mine? I would undertake to erect it complete for 500L, and to find the coals for it for 8L per month; while Mr. Taylor has called upon the shareholders for 2000L to carry his water machinery views into effect. I should be sorry to insult the intellect of the proprietary by dwelling, by way of proof, upon the capability of the mine, with reference to the difference of the outlay in water machinery and steam; the facts speak for themselves; but it is an acknowledged principle in well-regulated mines, that one-third of the proceeds ought to be profit, or in figures, say, 70 tons a month, or 800 tons a year, at 12L a ton, would give 10,400L a year, or, at one-third profit, 3400L a year—a sum well able to afford 100L a year for steam, if necessary. By this process of reasoning, both the expense of erecting, and the cost of maintaining a steam-engine, such as would be wanted, becomes a bagatelle, and the more so when we come to consider that Mr. Taylor is baffled in his present attempt to obtain water-power, and that the time is not far distant when every landlord in Cardiganshire will be compelled by the force of circumstances to allow the water running through his land to take its natural course, as no sensible landlord will allow the streams belonging to his ground to be diverted to work the mining machinery on that of others, when he requires it for his own. This is contrary to reason, and the sooner we are prepared to abandon a hope, false in principle, but too fondly cherished, the greater will be our advantage. Yours is a field, Mr. Editor, in which the difficulties attending mining operations ought to be settled; I have seen too much fondness for water-power, and other excesses in management, introduced, without discussion, into this country—witness Cwmystwith, a mine which, in the time of Mr. Lewis Pugh, with the then machinery, was enabled to draw 120 tons a month, and to give 10,000L a year profit; but with the present additional outlay of 3000L in machinery, and notwithstanding an agency of 1000L a year, being 830L addition in salary to the agency of that time, dresses now only 70 tons a month, and



MARAZION.—We are informed that mining operations are about to be recommenced in the neighbourhood of Marazion, and that Wheal Rodney, Tregertha Downs, and the south lode of the Marazion Mines are the localities referred to. We believe that Mr. R. R. Michell has been the principal mover in this matter, which cannot fail to prove highly beneficial to the inhabitants of Marazion and the whole neighbourhood. — *Pennine Journal*.



## BLAENAVON IRON AND COAL COMPANY.

The annual meeting of the proprietors of this company was held on Friday (yesterday) at the offices, Pancras-lane, Chesham, and was well attended.

R. W. KENNARD, Esq., in the chair.

The report of the past year's transactions was read, which our space obliges us to omit, but we may say that it was looked upon as a very satisfactory one by the meeting.

The CHAIRMAN said that, as they had heard the report of the directors, as well as that made by the inspectors, he would draw the attention of the proprietors to the accounts, which were then laid on the table. They had been drawn up as usual, and examined by their auditor, who had been appointed to his office by the proprietors themselves, and whose report was also on the table. It was satisfactory to receive reports from that gentleman from time to time, as to the efficient manner in which the officers and clerks in the employ of the company had discharged their respective duties. (Hear, hear.) As to their iron report, looking at the continually falling price of iron, and the difficulties the company had to contend with, he thought it must be highly satisfactory to know that they had been able to keep their ground, and that the directors had not been compelled to call them together, to consider on the state of their affairs, as had been the case with many other companies. Without doubt the year 1849 was worse than the previous ones, and yet they had effected a satisfactory result; for in 1847 they incurred a loss of 1801L; in 1848 the gain was 772L, and this year the net profits were 2689L 7s. 9d. (Hear.) This would not have happened without the aid of the gentlemen appointed as inspectors and their able officers, more especially of their manager, Mr. Johnson. (Hear, hear.) It would be recollected that the committee, who were appointed to look into the affairs of the company, advised the proprietors to subscribe a further sum of 2L 10s. per share, to place the company in a right position. The directors did hope, from the effect of the last meeting, a much larger sum would have been forthcoming on these 6 per cent. shares, which amount would be seen as only 8792L 10s., the whole of which had been expended in what had afforded the most beneficial results, and some other sums had since been laid out in the improvements, making altogether the outlay about 10,000L. They must be aware that this company never had so large a working capital; in fact, he might say that they never had a working capital at all; and if it had not been for the confidence of the directors in affording means, and particularly of their banker (Mr. Masseyman), to whom they were so much indebted, the company would have been in a sad condition in respect to capital. The directors had thus kept the concern together in bad times, and now it would be seen that with the means afforded by the proprietors, they had made a judicious outlay, from which much benefit had arisen. As to the gentlemen who were appointed inspectors, it was agreed that they should be so for one year, and that time being now expired, it was for this meeting to say if they were satisfied with the system now pursued; if so, they would agree to a resolution that those gentlemen be continued in their office. It had been stated by these gentlemen, that they expected, by a new system of management, to effect a saving of 10,000L a year, which many of them doubted at the time, but that result had been now accomplished. (Hear, hear.)

Mr. JOHNSON (the manager) said, that if the roads were made, the saving would be about 13,000L.

The CHAIRMAN having alluded in detail to the diminished items of cost in the make of iron, and other matters, at the works, said he hoped every one would consider the report now read as satisfactory, considering the adverse circumstances which had attended the iron trade. (Hear, hear.) He knew of no mining company in the kingdom that now had a better chance of prosperity, and that was prepared with better means of making the capital invested in it profitable to the proprietors, than the one they were now engaged in. In conclusion, he would beg to suggest that the report and balance-sheet be approved, printed, and circulated amongst all the proprietors. (Applause.)

JOHN MASTERMAN, jun., Esq., in seconding the report, mentioned the great satisfaction he had derived from a visit to the works, in company with Mr. Kennard and Mr. Warden, and also with the inspectors, on which occasion he had the pleasure of riding on the locomotive engine, which had only arrived the day before, and was the means of saving them the cost of so many horses. From all his inquiries, he could substantiate the fact of the vast saving already effected, and which he believed, under the able management of Mr. Johnson, would be carried to a much greater extent—the result of which must be for the benefit of the proprietors. (Hear, hear.)

Mr. Jones, Mr. Hill, Mr. Philip Jones, Mr. Ash, Mr. Sewell, Mr. Earle, Mr. Pidcock, Mr. Romer, and other proprietors, made some observations, when the report was adopted unanimously.—Messrs. Radford, Masterman, and West, were re-elected directors.—The inspectors (Messrs. Hill, Wheeler, and Jones) consented to continue in office until the next annual meeting.

A vote of thanks was then passed unanimously to the inspectors, to the manager (Mr. Johnson), to the directors, and also to Mr. Booth, the secretary.

A vote of thanks having been passed to Mr. Kennard for his valuable services as chairman, the meeting separated.

## EAST BIRCH TOR MINING COMPANY.

At a special general meeting of shareholders, held at the offices, Winchester-buildings, London, on Tuesday, 23d April—JAMES BAKER, Esq., in the chair—the directors presented the following report:—

In consequence of Capt. Cartwright's favourable report of East Birch Tor Mine, the secretary issued copies of the same to the shareholders, and the result has been the application for 20 additional shares, making a total of about 210 shares. It is only necessary to refer to the specimens on the table, received from the mine on the 16th inst., and to the underground capital report, and it will be at once obvious to you that the mine is one of a first-rate character, and only requires Capt. Cartwright's report to be acted upon in order to realize the hopes that have always been entertained respecting it. We are ourselves confident of the results. The object of the present meeting is to rescind a resolution, passed at the last meeting, for the issue of 400 additional shares, in consequence of which your directors, without the issue of that precise number, are unable to carry out the recommendations of Capt. Cartwright. Your directors would, therefore, recommend that they be empowered to act upon their own discretion, as to the number of shares to be issued, so that no further unnecessary delay may be experienced. They have reason to believe that they can effect the issue of 50 shares more, which will be nearly sufficient to secure profits to the undertaking. Your directors would urge upon the shareholders the advantage of increasing their number of shares in the undertaking, fully confident that they will eventually, by adopting Capt. Cartwright's report, reap an ample reward for their outlay.

It was proposed by the CHAIRMAN, and seconded by Mr. JAMES SAUNDERS, that Capt. Cartwright's estimate be deemed satisfactory, and that the resolution passed at the last special general meeting, respecting the issue of 400 of the reserved shares, be rescinded, and that the directors be empowered to proceed at once upon Capt. Cartwright's estimate, so soon as they shall have a sufficient sum upon the issue of shares.—After a vote of thanks to the chairman, for his efficient conduct in the chair, the meeting separated, highly gratified at the prospects of the mine.

## WHEAL TREHANE MINING COMPANY.

At a general meeting of adventurers, held at Liskeard, on the 19th instant, the accounts were examined and passed, showing—Balance at last account, 1018L 10s. 11d.; silver-lead ore sold, 1340L 18s. 1d.—2359L 9s.—By labour cost for Nov., 367L 4s. 1d.; ditto Dec., 364L 15s. 4d.; merchants' bills, 209L 2s.; Trelawny adventurers, for use of engine and water two months, 55L; lord's dues, 86L 14s.; on account of new engine and crusher, 300L; dividend, 384L; leaving balance in favour of adventurers, 592L 13s. 7d.—The increased cost, arising from the erection of the new engine, having reduced the balance, it was resolved that a dividend of only 1L per share be now declared; and that a few adventurers only having attended the meeting, the application of the yearwards be considered at the next meeting.

The following report, from the agent, was read to the meeting:—

April 19.—We have just commenced sinking Kelly's shaft below the 75 ft. level. This level is now driven 13 ft. north, and 7 ft. south, making the present drive in this level 30 ft.; the lode, for some part of this length, is divided into branches; in other parts it varies in size from 3 to 14 inches in width, and presenting in places favourable indications; in the present north end the lode is small, and the ground is disordered; in the south end the lode is getting more settled, and appears to be improving in size and appearance, and containing spots of lead. In the 68 ft. level south the lode is 2½ feet wide, and worth 5L per fm., which is just as it has been in the last 5 fms. driving; the lode in the north end, in this level, is improving in size and quality in the last 3 ft., being now worth 9L per fm.; the lode in the back of this level, both north and south, are producing, on an average, about 11L worth of lead per fm. The lode from the back of the 62 ft. level being taken away as far south as the end, we are now stopping from the bottom of the 55 ft. level, where the lode is worth 8L per fm. The lode in the stopes, in the back of the 55 ft. level, is worth 9L per fm. The stopes in the back of the 45 ft. level continue to produce 5L worth of lead per fm. We shall sample, next week, about 40 tons of crop ore, and about 40 tons of No. 2 parcel. You will perceive that there is a falling off in our samplings, which is caused by the unusual length of poor ground in the bottom level, and the stopes being harder. Should an improvement take place in the bottom, I hope we shall be able to do better.

## WHEAL BAWDEN MINING COMPANY.

The usual bi-monthly meeting of the shareholders was held at the offices, Threadneedle-street, when the accounts for the two months were presented, which showed a balance of 8L 17s. in favour of adventurers. A call of 1s. per share was made for further prosecuting the mine.

The following report, from Capt. T. Richards, was read:—

Since putting down the shaft, near the western boundary of the sett, which has been sunk 6 fms. 2 ft. on the course of the lode, averaging 2½ ft. wide, of a very promising character, containing gossan, carbonate of iron, and spar. We have opened eastward therefrom, by driving and shooting, and find the lode to be divided, both parts of which have been intersected by the adit cross-cut. We are now driving on the south and main part, in the adit level, which has been extended thereon upwards of 30 fms.; the lode throughout this driving has been of a variable character, from 2 ft. to about 10 in. in width, containing a small portion of gossan, with spar, manganite, carbonate of iron, and in places good spots of lead. In the present end of the drive the lode is about 1 ft. wide, much of the same character. The gossan in the shaft appears to dip to the eastward, and as the adit level will come under the run of gossan, upwards of 20 fms. in depth, and the ground being of a favourable description, the present price for driving being only 1L 10s. per fm., I should recommend pushing forward the levels with all possible speed.

## DEEP RIVER MINING COMPANY.

The annual general meeting of this company was advertised to be held on Thursday last, the 25th instant, at the offices, Queen-street-place, Southwark-bridge, when there not being sufficient shareholders present to constitute a meeting, it was adjourned to a future date, to be decided on by the directors according to circumstances. The mine is situated in one of the southern states of North America, and has produced copper ore, with indications of gold, but not having answered the anticipations of the adventurers, the directors recommended a dissolution of the company, and instructions had been sent out to Capt. Faulk (the agent) to dispose of the land, machinery, ores, and materials. It is now understood that the directors will wait Capt. Faulk's return to England, before they call another meeting, as they will then, probably, know their exact position as to assets.

## LLWYNMALES MINE.

Sir,—As a friend to Mr. Adam Murray, jun., and being myself the party who requested that gentleman to visit and report on Llwynmales Mine in 1849, and before that date, I feel pleasure in requesting you will insert the enclosed report, from Capt. Henry Francis, the captain of the mine, which fully confirms Mr. Murray's report of July, 1849, as the subscribers to your Journal will perceive by reference. This favour I think you will grant, as it substantiates Mr. Murray's statement to the shareholders in the mine, on whose judgment and professional knowledge of the county of Cardiganshire they were induced to expend capital, to fully develop the resources of this mine. I can myself fully bear out the correctness of the present report and former ones, having been down four times personally, as a shareholder, to satisfy myself, within the last few months.—J. MATTHEW, Esq., *Cyphall-court, April 25.*

Llwynmales, April 25.—As you have not received any report of this mine, other than the usual weekly ones, I beg now to hand you a report of our progress since Mr. Adam Murray's inspection, in July last. Mr. Murray's opinion of the mine at that time, particularly of the western ground, is now, I am happy to say, more than confirmed in every respect, which must be very gratifying to that gentleman's acknowledged talents. Since that period the western mine has been sunk down to, and communicated with, the 8 ft. level. The 8 ft. level has been extended 11 fms. west of this mine in a good lode, and for 5 fms. east of the mine the same level has been productive, making together a length of 17 fms. of productive ground, with a back nearly to surface, from which 30 tons of ore have been taken out and sold, on the 8th inst., for 13L 13s. 6d. per ton, a higher price than has hitherto been obtained for Llwynmales ore. The end of the 8 ft. level is now in good ore, and from the character of the ground westward, it is most likely to continue for several fathoms. We have remaining in the back of this level several fms. of valuable ore ground to take away. The London shaft has been sunk under the 14 ft. level sufficiently deep for another level, and has gone through ore ground from the 14 ft. level to its present bottom, which looks more promising than any part upwards. Oiler's mine, 12 fms. east of London shaft, has been sunk 5 fms. 4 ft. under the 14 ft. level, on a productive lode; and when a level—say, the 24 ft. level—has been extended east from London shaft under this mine, a good deal of valuable ore ground will be laid open. A level, west from London shaft, which is 24 fms. under adit, will be of great importance to our future returns, as from the discoveries already made in the 8 and 14 ft. levels, it will extend a considerable distance westward in productive ground. The 14 ft. level has been driven 23 fms. west of London shaft in a good ore lode, and is fast approaching the shoot of ore discovered in the 8 ft. level west. This level, when extended and communicated with the western mine, will materially add to our returns. The backs over the 14 ft. level, west from London shaft, remain untouched, and only require sufficient power for crushing. The steam-engine now in process of erection will give us the desired power, and will be the means of speedily remunerating the shareholders for the spirited manner in which they have expended their money on this mine. Our pool being nearly full, we shall sample from 20 to 30 tons of ore by the end of May.

## MINING NOTABILIA.

[EXTRACTS FROM OUR CORRESPONDENCE.]

BIRCH TOR AND VITIFER.—The workings in this mine are said to be looking exceedingly well; and the agents expect soon to make up the loss occasioned by the mine being so long under water.

MINERA MINES.—The works at these mines are progressing favourably, and it is anticipated that in the course of a few weeks the engine will be in working order.

PLYMOUTH WHEAL YEOLAND.—In the pitch in the 20 ft. level there is a good lode going down 12 fms. in length, which, with 12 fms. in depth, will give 144 fms. of backs in it, it is believed, good tin ground.

TRILLOWETH COPPER MINE (St. Erth).—It is about to commence working, after being suspended upwards of 20 years. A 60-inch combined cylinder has been purchased for her at Ting Tang. Some men are already employed at the surface, preparatory to the erection of the engine—a substantial engine-house being already on the mine, built upwards of 20 years ago.

WARLEGGAN CONSOLS.—Two new lodes have been cut in this mine, both kindly, and one carrying tin in the back.

WHEAL PROVIDENCE.—Another pitch has been set at 10s. in 1L, and the tributors have well.

WHEAL HARBET.—We understand that this mine, situated in the Camborne district, has been taken up by parties who intend to work it with spirit, and who have much faith in the undertaking turning out highly productive.

CARADON VALE.—The whole of the Caradon Vale shares have been taken up, and it is intended to proceed with the works with all expedition. A meeting of the shareholders will speedily be called, and a committee appointed. The mine bids fair to turn out great riches.

THE EDDISBURY MINES.—In the Vice-Chancellor's Court, on Thursday, an application for an injunction was made to restrain the working of certain mines, near Macclesfield, called the Eddisbury Mines, under these circumstances:—It appeared that the plaintiffs were owners of some adjoining land, and complained that the re-opening would cause an interruption of the flow of water to their land, in which it was alleged they had acquired a right to have the water remain as it was, by reason of their having occupied the land for so long a period. The matter was of so imminent a nature that it was necessary an immediate interference should take place. The Vice-Chancellor said, as the danger anticipated appeared to be immediate, he would grant the injunction *ex parte* for a fortnight, and direct the plaintiffs to serve the defendants with notice for Saturday, the 4th May.

BODMIN CONSOLS.—This lead mine, which has been in work only about two months, promises, as we are told, to be rich in silver: 3½ ounces of the ore have been melted this week by Mr. Byne, of the Mint, and they contained 10 gr. of pure silver.—*Western Times.*

RAILWAY TRAFFIC.—The gross receipts on railways in the United Kingdom, during the first 15 weeks of the present year, amounted to 3,075,230L, being at the rate of 576L per mile. At the corresponding period of 1849, the receipts amounted to 2,737,226L, being at the rate of 606L per mile; of 1848, to 2,377,706L, at the rate of 663L per mile; of 1847, to 2,100,926L, at the rate of 752L per mile; and at the same period of 1846, the receipts amounted to 1,851,973L—being at the rate of 874L per mile. The aggregate length of railways open over which the traffic was carried at the end of the 15 weeks in 1850, was 5455 miles; in 1849, 4585 miles; in 1848, 3664 miles; in 1847, 2891 miles; and at the end of the period mentioned in 1846, 2120 miles.

LONDON AND NORTH-WESTERN RAILWAY TRAFFIC.—The traffic for the week ending the 21st April was 3249L in excess of that for the corresponding period of 1849. This excess is exclusive of the traffic of the Huddersfield Canal, Shipshire Union, North Union, Preston and Wyre, South Junction and Manchester, and Buxton Railways. The amount due to the North Staffordshire Company, under the contract with them, is deducted in the weekly return in which the above large increase of traffic is shown. The aggregate receipts since the commencement of the present year have amounted to 639,071L, while the amount received for the corresponding period of last year was 601,728L; the increase has, therefore, been 37,343L—viz.: 2332L per week, or at the rate of upwards of 120,000L per annum.

RUGBY AND STAMFORD RAILWAY.—A portion of this line, extending about 18 miles, from Rugby to Market Harborough, is to be opened on Monday. It is expected that the remaining portion of the line (17 miles) to Stamford will be ready for opening in a few months.

STONE PAPER.—A known correspondent writes to us regarding the stone paper for roofs, which is mentioned in the London papers as a late invention of Messrs. Ehart, papermakers, in Germany, that a similar paper was made in England about 50 years ago for the same purpose; that it was said to be incombustible and impermeable to wet; and that he saw a specimen of it in the cabinet of a friend about the year 1800.—*Scotsman.*

## CORNISH STEAM-ENGINES.

The number of pumping-engines reported for the month of March is 25—the quantity of coals consumed being 2245 tons, lifting, in the aggregate, 20,000,000 tons of water 10 fathoms high—the average duty of the whole is, therefore, 52,000,000 lbs. lifted 1 foot high by the consumption of a bushel of coal.—The following have exceeded the average:—

Mines.	Engines.	Length of stroke in feet.	Load in pounds.	Load per sq. inch.	Strokes per min.	Consumption of coal in lbs. per bush.	Millions of lbs. of water lifted 1 foot by 1 bush of coal.	Lifted 1 foot by 1 bush of coal.
Great Work...	Leed's 60-in. ...	9-0	55,343	15-2	7-8	2040	60-3	72
East W. Croft...	Frevenon's 80 ...	10-3	82,833	15-2	7-0	3184	56-9	68
Carna Bra...	" 76-in. ...	8-2	84,597	14-7	4-2	1700	85-9	68
Ditto	" 50 & 90 ...	9-0	60,852	24-1	5-7	1718	57-3	68
Poldice	" 50-in. ...	10-3	77,545	9-5	11-1	4448	55-1	66
S.W. France	" 75-in. ...	11-0	54,562	10-1	5-7	1710	64-6	77
United Mines	Cardozo's 90-in. ...	9-0	100,682	18-8	8-0	4526	53-2	76
Ditto	" 30-in. ...	9-0	13,681	16-0	8-0	805	65-7	66
Ditto	" 30-in. ...	10-0	87,947	11-6	8-1	3081	52-8	63
Ditto	" 30-in. ...	10-0	97,817	14-4	8-4	5084	53-5	64
Treleigh Com.	Gardner's 80-in. ...	10-25	24,865	18-8	4-9	1104	82-1	62
Tywarthayle	Gardner's 80-in. ...	10-0	75,928	12-0	7-9	3432	63-6	64
East W. Croft	Pennos 70-in. ...	10-0	77,063	18-0	4-5	2160	57-8	69
Ditto	" 70-in. ...	10-0	75,258	17-6	4-1	1890	58-4	70

## LATEST CURRENT PRICES OF METALS.

LONDON, APRIL 26, 1850.

ENGLISH IRON.	per ton.	ENGLISH LEAD.	per ton.
Bar, bolt, & square, London	£3 10-0-15	Old copper	per lb. 8½d 0d
Nail rods	5 0-6-10	Yellow Metal Sheathing	8½d
Hoops	7 6-7-10	FOREIGN COPPER.	
Sheets (single)	8 0-8-10	Chili	90 6 0
Bars, at Cardiff & Newport	12 6-4-15		
Refined metal, Wales	3 5-3-10		
Do. anthracite	3 10-0		
Pigs in Wales	3 0-3-5		
Do. do. forge	2 10-2-15		
Do. No. 1, Clyde, net cash	2 2-2-3		
Blewitt's Patent Refined Iron for bars, rails, &c., free on board at Newport	3 10-0		
Do. do., for tin-plates, boiler plates, &c., ditto	4 10-0		
Stirling's Patent in Glasgow	2 13-0		
Toughened Pigs in Wales	3 10-3-15		
Staffordshire bars, at the works	5 15-6-0		
Pigs in Staffordshire	3 8-0		
Chairs	8 0-5-8		
Rails	4 0-0		
FOREIGN IRON.			
Swedish	11 10-13-0		
COND			
PSI			
Gouffier			
Archangel			
FOREIGN STEEL.			
Swedish keg	14 0-14-15		
Ditto faggot	14 5-15-0		
Tough cake	per ton 88 10-0		
ENGLISH COPPER.			
Sheets, sheathing, & bolts, p. 75	0 0-10		
English sheet	per ton 21 0-0		
QUICKSILVER.			
English sheet	per ton 21 0-0		

TERMS.—a, 6 months, or 2½ per cent. dis.; b, ditto; c, ditto; d, 6 months, or 3 per cent. dis.; e, 6 months, or 2½ per cent. dis.; f, ditto; g, ditto; h, ditto; i, ditto; j, ditto; k, net cash; l, 6 months, or 3 p. cent. dis.; m, net cash; n, 3 months, or 1½ p. cent. dis.; o, ditto; p, ditto.

REMARKS.—During the past week, copper has been very firm; the demand for iron has been limited, that for lead dull, while English tin has rather improved—at present it is quoted here at 77s. per cwt. At Rotterdam the price of Banca tin has risen, the present price being 43d. in bond, which will be equal to 70s. 3d. per cwt., or 70L 5s. per ton—the quotations here are buyers', 71L; sellers', 72L.

LIVERPOOL, APRIL 26.—We are unable to report any decided improvement in the market for manufactured iron since this day week. The amount done in Scotch pig has been to a fair extent, but there is not that firmness in prices which holders could desire and had hoped to have seen existing at this time. There is not much doing for export just now. In tin, lead, or copper, there is no change.

MANCHESTER, APRIL 23.—There is still no disposition apparent amongst dealers to increase their stocks of Scotch pig-iron, the opinion of the trade generally being that, notwithstanding the low prices at which the article is offered, it has not yet reached its lowest point. Whilst this feeling prevails (and considering the absence of any special demand, and the continuance of the make, on an undiminished scale, it is obviously not without foundation), it is hopeless to look for any return of a healthy activity. Prices are nominally unchanged.

GLASGOW, APRIL 25.—The market for pig iron continues in the same dull state as before reported. Throughout the week a few sales of mixed No. have been made, at 42s. to 42s. 6d., cash, and which we quote as the price to-day.

## EXPORTS OF METALS TO ALL INDIA FROM LONDON AND LIVERPOOL.

FOR THE FIRST THREE MONTHS OF 1849 AND 1850.

Metals.	1849.	1850.	In. in 1850.	Dec. in 1850.
Spelter	683	314	—	369
Copper	1306	1540	234	—
Iron, British	6771	8993	3222	—
Ditto, Foreign	631	145	—	486
Tin-plates	1163	3809	2646	—
Lead	809	722	—	87
Steel	60	101	101	—
Quicksilver	5	12	7	—

EXPORTATION OF THE PRECIOUS METALS.—The following are the official returns of the exports of gold and silver from the port of London for the past week:—Gold coin to Hamburg, 1500 ozs.; bars to Mogadore, 66 ozs.—Silver bars to Mogadore, 390 ozs.; ditto to Dunkirk, 20,000 ozs.; ditto to Hamburg, 3800 ozs.—Total gold, 1666; total silver, 23,190 ozs.

PRIZE LOCOMOTIVES FOR AUSTRIA.—In last week's *Mining Journal* we stated that the Austrian Government had offered a prize of 20,000 imperial ducats, 10,000L, for a locomotive, the most suitably constructed for conveying goods on the line about to be constructed over the Sommering Mountains. The official notice has just been issued by Baron Lionel N. de Rothschild, in which no less than six prizes are offered, the other five prizes being respectively 5000L, 4500L, 4000L, 3500L, and 3000L, the whole amounting to 30,000L. Plans and particulars of this interesting competition may be had at the Austrian Consulate General, in New-court, St. Swithin's-lane.

ELECTRIC TELEGRAPH IN FRANCE.—Several English engineers are now in Paris ready to enter into contract with the Government for constructing the telegraph on all the lines of railway. The subject is under the consideration of a commission, and it is not known what system will be adopted. Wires covered with gutta serena, laid underground, after the Prussian method, appears to be the favourite.

THE ELECTRIC TELEGRAPH.—In the *Mining Journal* of 2d March, we gave the result of a trial, arising out of an action by the Electric Telegraph Company against Messrs. Brett and Little, for an alleged infringement of their patent, when the verdict was nominally for the plaintiffs, with power to defendants to move to enter the verdict in their favour, or set it aside, and enter a nonsuit. On Saturday last, in the Court of Common Pleas, Mr. Cockburn moved accordingly, and stated the case at considerable length. It appeared that, on the 12th January, 1847, Messrs. Cooke and Wheatstone took out a patent for improvements in giving signals, and sounding alarms, in distant places, by means of electric currents, conveyed through metallic circuits. It had been previously known, but found difficult to carry out, in consequence of the number of wires required. Messrs. Cooke and Wheatstone, by the discovery of the deflection of the needles either way, and by using five needles, completed the signs of the alphabet by six wires—five for the needles, and a return wire to complete the circuit. This was a great improvement over the plan with 50 wires; but Messrs. Brett and Little found that a return wire was not necessary, as the return circuit could be made through the earth. This discovery saved many miles of wire; they also found out that one wire would set on two needles, and could be made to deflect them either way; and, instead of having letters of the alphabet, they adopted a system of counting—viz.: one needle, once to the right, represented A; two deflections to the right B; one to left, C, and so on; so that, by two needles and their combinations, not only can the whole alphabet be represented, but also a vast number of signs and figures. Mr. Cockburn laid great stress on the use of one wire only, as in itself rendering the patent of Messrs. Brett and Little totally different from that of the company. The Attorney-General said that, on the part of the plaintiffs, he wished for a new trial on the ground of misdirection. The verdict had been really against the plaintiffs, though nominally in their favour, which he thought was owing to the manner in which the jury had been directed. After a great deal of discussion, Mr. Cockburn took a rule by consent to show cause why the verdict should not be set aside, and a nonsuit entered; why the verdict should not be entered for defendants; or why there should not be a new trial; so that the points might be on each side argued, when plaintiffs' counsel showed cause against the rule.

CAPT. FITZMAURICE'S ROTARY ENGINE.—The Lords of the Admiralty, being desirous of witnessing the working of Capt. Hon. W. G. Fitzmaurice's rotary engine, the launch in which it had been placed was navigated, on Tuesday last, from Taplow, on the Thames, near Maidenhead, to Somerset-house, a distance of 50 miles, which it accomplished in five hours, exclusive of the time occupied in passing the locks; the engine having increased in velocity with the same screw from 190 to 230 revolutions per minute. On Wednesday, the launch got her steam up, and proceeded from Somerset-house to Whitehall-stairs, where the Lords of the Admiralty, with Capt. Sir E. Belcher, K.C.B., surveyor of the navy, and Mr. Lloyd, chief engineer at the Admiralty, witnessed the capabilities of the rotary engine, which were so satisfactory that it was ordered to be taken to Woolwich, for the purpose of making a series of experiments with it, and



**Tredegar.**—H. Roberts lost his life by a fall of rubbish, while raising mine.  
**Durham.**—B. Holdsworth fell out of the skip at the Black Boy Colliery, Bishop Auckland, and received such injuries that he died two days after.  
**Maestri.**—A lad, named Wheatley, was severely scalded with liquid metal at the Phoenix Foundry: a quantity of metal, for the casting of a boiler, had been poured into a box, and which burst.



## NOTICES TO CORRESPONDENTS.

\* We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

"A Captain."—We are not sufficiently intimate with works on trigonometry to take upon ourselves to say which is the best. Budge's *Practical Miner's Guide* comprises complete trigonometrical tables, adapted to all the purposes of oblique, vertical, horizontal, and transverse dialling, with much additional information of importance to the miner. It was published by Messrs. Longman, Paternoster-row, London, price 12s.

"Miner" (Camborne).—Nitrate of potash is an acidulous alkaline mineral; it occurs in crusts, and in capillary crystals, of which the forms are not discernible; it is white, or yellow; it is translucent or transparent, brittle, saline, and cooling to the taste. It deflagrates when placed on a hot coal, and detonates with combustible substances. It is found on or near the surface of the earth, on old walls, &c. In Hungary, Persia, Arabia, Egypt, and in many of the plains of Spain it is found in considerable quantities. It is also common in India, especially on a large plain near Agra, in Bengal. The mountainous regions of Kentucky, which are calcareous and full of caverns, afford it to the inhabitants of North America. In South America, the plains bordering the sea near Lima are covered with it. It is not, however, produced naturally to an extent sufficient for its multiplied uses, and is, therefore, principally procured artificially from the decomposition of animal and vegetable substances. Nitrate is employed in medicine, the arts, and in metallurgy, but its chief use is in the manufacture of gunpowder. That imported from Egypt is most esteemed, as it contains the least calcareous matter.

"An Intended Emigrant."—The report of Mr. Butler King, on the metalliferous character and future prospects of California, as a gold-producing country, we have received, the general details of which will be found elsewhere. Our correspondent should consider, however, that Mr. King recommends that licenses for digging shall be granted solely to Americans, either born or naturalised citizens, and it is probable Congress may pass some such regulation. Mr. King states, that the territory was obtained under treaty at American cost, and its wealth ought to be retained by the United States population, and handed down as a valuable boon to posterity. He estimates that a large revenue will arise from fees on permits or licenses, from royalties on regular vein mining operations, and that other metals will yet be found in abundance, as copper, iron, quicksilver, &c.

THE SULPHUR TRADE.—"A. Z."—We stated in our last that the demand for sulphur by St. Petersburg had been so great that there were no stocks on hand at Messina, and that it cannot be brought sufficiently fast to the shipping places to meet the demand. Prices will, therefore, doubtless continue; the first quality cannot be obtained under 28 tari per cantar; second best, 27 tari 5 gr.; and third best, 25 tari per cantar.

"G. W." (Pentonville).—Dr. Lardner, in his lately-published *Economy of Railways*, thus endeavours to convey to the unpractised reader the enormous speed of a locomotive going at the rate of 70 miles an hour:—"Seventy miles an hour is, in round numbers, 105 feet per second—that is, a motion in virtue of which a passenger is carried over 35 yards between two beats of a common clock. Two objects near him, a yard asunder, pass by his eye in the 25th part of a second; and if 35 stakes were erected by the side of the road one yard asunder, the whole would pass his eye between two beats of a clock; if they had any strong colour, such as red, they would appear a continuous flash of red. At such a speed, therefore, the objects on the side of the road are not distinguishable. When two trains having this speed pass each other, the relative velocity will be double this, or 70 yards per second, and if one of the trains were 70 yards long it would flash by in a single second. To accomplish this, supposing the driving wheels 7 ft. in diameter, the piston must change its direction in the cylinder ten times in a second. But there are two cylinders, and the mechanism is so regulated, that the discharges of steam are alternate. There are, therefore, 20 discharges of steam per second at equal intervals; and thus these 20 puffs divide a second into 20 equal parts each puff, having the twentieth of a second between it and that which precedes and follows it. The ear, like the eye, is excited in the rapidity of its sensations, and sensitive as that organ is, it is capable of distinguishing sounds which succeed each other at intervals of the twentieth part of a second. According to the experiments of Dr. Hutton, the flight of a cannon ball was 6700 feet in one quarter of a minute, equal to 5 miles per minute, or 300 miles per hour. It follows, therefore, that a railway train, going at the rate of 75 miles per hour, has a velocity of one-fourth that of a cannon ball; and the momentum of such a mass moving at such a speed is equivalent to the aggregate force of a number of cannon balls, equal one-fourth of its own weight."

KEY TO RAILWAY INVESTMENTS.—By John Whitehead, of the Stock Exchange, London.—We have received the Third Part of this publication, which contains a review of the position and prospects of the "London and South-Western Railway Company," and gives the same clear insight into its financial resources and future probable results as marked the two preceding numbers.

LIGHTNING CONDUCTORS.—We have received Mr. Bagge's communication on this subject, in reply to Dr. Murray, in which he states that galvanic protectors are not efficient when the air is humid merely. It is necessary that it be saturated, and that dew be precipitated upon the metals. A shower of rain will, of course, answer the purpose, but not merely humid air. The publication of the entire letter would effect no good end, as the controversy has become too personal, and had here better close.

"X. Y. Z." (Birmingham).—We have no faith whatever in the concern itself, or the parties connected with it.—See *Mining Journal*, 16th and 23d March last.

In reply to several correspondents, the work, entitled *Mining Adventures; with a Digest of the Cost-book System*, will, we understand appear next week.

Mr. D. Musket's paper, "On the Ventilation Evidence—Life Insurance," shall appear in our next Journal, when we hope to find space also for that "On Patent Law and Patent Right," the length of which has prevented its publishing before.

\* It is particularly requested that all communications may be addressed—

TO THE EDITOR,  
Mining Journal Office,  
26, FLEET-STREET, LONDON.

And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors.

## THE MINING JOURNAL

Railway and Commercial Gazette.

LONDON, APRIL 27, 1850.

The *MINING JOURNAL* is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

In a prominent position, in our last Number, there appeared some observations on the fearful depression to which railway property, throughout the kingdom, had been subject, having, during that week, in most instances, reached a lower quotation than transactions had ever been done at before. We also, in the course of those remarks, noticed a pamphlet, just published, by Mr. ADAMS, of Bow, in which the principal prescription given as a panacea for the recovery of all the losses, and avoidance of the numerous evils which have hitherto attended railway progress, is the entire reconstruction of the rolling stock, and the employment of lighter engines, larger carriages, but lighter loads, and more frequent journeys. Now, although we hail Mr. ADAMS's pamphlet as tending, at least, to cause serious attention to the subject, and although the locomotive engine has, on some of the lines, attained that preposterous weight, which has caused a most unreasonable wear and most unreasonable expense in the permanent way, we do not think it yet sufficiently established, that very light engines, which could, of course, draw only very light quantities of passengers, are capable of exerting a sufficient amount of power for the requirements of railway purposes. The greater number of passengers, or weight of goods, which one locomotive can take at one journey in a given time, as compared with taking half the number only, and making two journeys, is, in an economic point of view, highly in favour of the former; and we have yet to learn that these model locomotives, mentioned by Mr. ADAMS, on the Eastern Counties, North Kent, Bristol and Exeter, and Cork and Brandon lines, can make two journeys, with only an equal amount of fuel which a larger engine consumes in one. If they do not do this, leaving loss of time out of the question, the suggestion loses its weight, and the saving in the wear of the rails is balanced by the loss of time and fuel. These light engines undoubtedly are of the proper *calibre* for branch lines, where the traffic is confined, and nearly regular; but for through journeys, on long trunk lines, we fear they would be found to increase the evil they were intended to diminish. Notwithstanding the locomotive engine must be looked upon as the most beautiful consummation of ideas which ever emanated from the pursuits of science, and notwithstanding the consumption of fuel per mile has, in the course of 20 years, been reduced from 60 to 70 per cent., it still remains a costly agent, and we fear, always will remain so. A machine which gives out three-fourths of its power to move its own weight before one pound of force is exerted for paying transit, can never be brought to accomplish the same effects as a stationary engine; and we cannot divest our minds of the idea, that the day will yet arrive when railway transit will be accomplished by fixed engines, at a cost of not above one-quarter the amount which the employment of the locomotive entails on railway proprietors, and combining a greater degree of regularity, speed, and safety. It has been demonstrated to a certainty, to the satisfaction of many scientific men, that the atmospheric plan, patented by Messrs. CUNNINGHAM and CARTER, would accomplish this; while it is, in fact, only the locomotive reversed, the power being transferred from the moving body to driving-wheels, fixed by the rails. If once the patentees could succeed in obtaining a line of only a mile in length, it would, in a few years, make its way to every line in the kingdom, as the whole power exerted by the engine is spent in profitable transit, minus the friction, which is very trifling. There are other plans which we have no doubt would be found more economical, and equally efficient with the locomotive, could once an effective trial be obtained; and far be it from us to say that the locomotive engine has reached that point at which no further improvement can take place. It is highly probable that the continued advance of science will have a most

beneficial result on railway economy, and that every year progress will be made towards those important desiderata—economic modes of traction, diminished cost of maintenance of way, and decreased taxation. Already numerous important improvements have taken place in the details of locomotion, and particularly in the method of laying down the permanent way; but it is evident railways were originally commenced without sufficient knowledge, and mechanical experience as applied thereto has not kept pace with railway extension. Hence the costly character of sudden radical change will prevent the introduction of any new general plan at once, and it must be a work of time before the whole system of our railways can undergo that metamorphosis, which will render them as profitable as they ought to be, even with that extension of traffic which ever will follow growth of population. Notwithstanding the improvements which have taken place in the locomotive engine by STEPHENSON, CRAMPTON, SAMUELS, McCONNELL, and others, and in the mode of laying the permanent way by McNEILL, REID, BARLOW, and numerous other competitors, we fear it will be long, notwithstanding Mr. ADAMS's expressed conviction to the contrary, before locomotion will arrive at that point at which it will be capable of effecting economic transit; and we repeat we think the time is not so very distant when the fixed engine, as a more scientific machine, because capable of performing more work at less expense, will, with a fully effective system of traction, be brought into requisition. Until some radical change is effected in the entire details of railway transit and management—a change, too, without cutting down the salaries of subordinates to a disgraceful minimum—returns will continue to diminish, proprietors will receive more and more diminished dividends, and prices of shares will continue to decrease.

From a parliamentary paper, moved for by the President of the Board of Trade, and just issued, we find the length of railways open on the 30th June, 1849, to have been 5447 miles, and the number of persons employed on them 55,968. The length of railways in course of construction at the same date was 1504 miles, employing 103,816 persons. Besides these 6951 miles of railway, Acts had been obtained for the construction of 5132 miles, on which no work had been begun, making 12,083 miles sanctioned by the Legislature. The number of persons employed on the larger lines were—Eastern Counties, 2939; Great Western, 2997; Lancashire and Yorkshire, 3971; London and North-Western, 6743; London and South-Western, 2118; London, Brighton, and South Coast, 2053; Midland, 4895; York, Newcastle, and Berwick, 2731; Caledonian, 2409; North British, 1535; Edinburgh and Northern, 1005. In 13 months preceding last summer, from the gradual completion of works, 91,081 persons had been discharged from railway works.

As a line of extreme importance, particularly as uniting Ireland more closely to England, and greatly advancing her interests, by bringing the two shores in close contiguity, and establishing rapid, continuous, and punctual intercourse, the CHESTER AND HOLYHEAD RAILWAY stands pre-eminent. Tied down by the dicta of Government and the wise heads at the Admiralty, they have been compelled to build, at an enormous cost, bridges which have no equal in the world; in the most heartless manner—indeed, by nothing less than a threat—they compel them to subscribe 200,000*l.* for accommodation for their steamers in the Royal harbour of Holyhead, for the Holyhead and Kingston traffic, on which they expended 160,000*l.*, and have, by these enormous outlays, brought the metropolis of each island within 13 hours distance of each other. Indeed, it may be attributed to this line that the intention has arisen of abolishing the Lord-Lieutenancy of Ireland, and of conducting the affairs of Ireland in Downing-street. Having thus established this great national, this great public good, we find them opposed by the Lords of the Admiralty in their attempt to secure the conveyance of the mails, and a thorough and bungling job perpetrated, by handing over the water transit to the Dublin Steam-Packet Company, thus sending the mails through two sources instead of one. These enormous expenses and opposition from Government, who should rather have aided them in so important an enterprise, have brought shares on which 50*l.* have been paid down to 6*l.*, and even at that price the prospect of a proportionate dividend is most woefully remote. Is it to be tolerated that spirited private enterprise, on a work of such magnitude and public importance, is to be thwarted in its every movement, and the subscribers thereto despoiled of their property, and many well-nigh ruined, by the imbecile or wicked interference of those ignorant and irresponsible bodies which are such a curse to this country, and a disgrace to the Government who sanctions their appointment? If Parliament were to vote half a million of money to the Chester and Holyhead Company, as compensation for the great national benefits they have conferred, and the irredeemable costs to which they have been subjected, its interest would not more than cover the gains, in a pecuniary way, which the public will reap by the construction of the line.

We are happy to find that the county of Cornwall is not likely to be behind hand in demonstrating its entire concurrence in the objects, and its united endeavours to advance the success, of the Exhibition of Industry of all Nations in 1851. A central committee has been formed in Truro, and district committees at Falmouth, Penzance, Bodmin, St. Austell, &c. At a meeting of the latter a considerable number of working men were present, and it is intended to form a committee of working men, more effectually to obtain the co-operation of the working classes. A meeting of the central committee was held on the 17th inst., which was well attended—Sir C. LEMON in the chair—at which it was resolved to apply to the Royal Commissioners to ascertain what are their views in respect to the exhibition of such substances as, being produced by numerous persons in all parts of the county, and differing very little in character, hardly appear fit for competition; and which, therefore, could not very well be exhibited, unless like specimens are allowed to be sent in from different exhibitors. It was also decided that the Redruth and Camborne committees be requested to furnish specimens illustrative of copper ore; that the Penzance committee be requested to furnish specimens illustrative of the building and ornamental stones of their district—of wolfram, and any other peculiar metallic ores of the locality, and also to illustrate the Mounts Bay and St. Ives fisheries. That the Penryn and Falmouth committee be requested to furnish specimens illustrative of the granite building and road stones of that district, and of the barges and boats of the port of Falmouth; and that the Truro committee be requested to furnish specimens of lead and tin ores, and stones for building and ornamental purposes.

At this meeting the arrangements were fully organised for advancing the interests of the exhibition in a manner worthy the largest metalliferous county in the kingdom; the secretaries of the various local committees will furnish from time to time such information as will enable the central committee most effectually to co-operate with the commissioners, and subscriptions have been opened for a twofold purpose—that to be forwarded to the general fund in London, and the other to be appropriated to the necessary expenses of preparing and forwarding articles from Cornwall to the exhibition. At this meeting, as well as at the several local ones which have taken place, the greatest unanimity prevailed; but one feeling appeared to actuate those attending them, which was a full conviction of the benefits likely to accrue from the exposition, both in a commercial and political point of view—advancing the interests of trade, and tending to uphold peace among all nations.

THE COAL MINES OF LABUAN.—A correspondent from Singapore, under date March 5, informs us that the coal mining company in Labuan got on but slowly; in fact, they do not raise sufficient to supply one steam-boat. This appears unaccountable, but is undoubtedly correct, as in the *Singapore Free Press* of March 1, it is confirmed to some extent by the editor, who, in a leading article, states that the coal mines are an element of future success, not yet fully appreciated; but that statesmen must, for the national advantage, see to their more full development, independent of the success or failure of the Eastern Archipelago Company; and, in alluding to the endeavours of the Dutch to extend their own, at the expense of our commerce, says "the certainty of being able to obtain a supply of coal in these seas must be looked upon as of such importance to the nation, as to justify our securing and retaining so valuable a prize." It certainly is highly necessary that something should be done with these valuable possessions, as the Dutch are already in the field with some tolerably good coal from Pontianak.

## HISTORY AND MANUFACTURE OF GUNPOWDER.—No. III.

BY JOHN JOSEPH LAKE, OF THE ORDNANCE DEPARTMENT.

Nitre, saltpetre, or nitrate of potash, is a compound of nitric acid and potash. It can be prepared artificially; but the saltpetre of commerce of this country is procured chiefly from India, where it is found as a natural efflorescence of the soil. The production of it is also materially aided by art. The tall grass of the country is customarily burnt in the autumn, and forms beds of very large extent, covered with the salts and earths resulting from the incineration. These lying all the winter on the sides of the hills, exposed to meteorological influences, great quantities of nitre are produced, which is washed down into the valleys during the rainy season, where the solution, partly absorbed by the earth and partly flowing above it, is exposed to the heat of the sun, by which the moisture is evaporated, and the salt left in a dry state, mixed up with the soil, or on the surface of it. These streams, as they descend from the higher grounds, are sometimes turned into places where the absorption of the water by the ground is prevented, and where, therefore, a strong solution of the saltpetre is produced by the evaporation arising from the heat of the sun. This solution is afterwards taken out and purified, and then reduced to a crystalline form by artificial means. At Patna this salt is extracted from an earth, which is either of a black, whitish, or red colour. The manner of procuring the nitre is by digging a large pit, in which this peculiar earth is deposited with water, and kept stirred, until it comes to a consistency. After the solid matter has settled, the water is drawn off into a second and smaller pit, from which the clear on the top is taken out and boiled in cauldrons; it is skimmed whilst boiling, and in a few hours the saltpetre is obtained, which is said to be much superior to any that is found elsewhere. In many other parts of the East Indies the soil is naturally impregnated with nitrate of potash; and in these places the inhabitants throw up the soil in little heaps, and at the proper season the salt is extracted. This method was formerly practised in Egypt, where the surface of the earth is found covered with a whitish crust of saltpetre in some places, and in others it is discovered by the taste of the earth, which, in both cases, was dug up, and being passed through sieves, was steeped in water and boiled, until crystallisation of the salt took place. All the gunpowder formerly made in Egypt was manufactured with this saltpetre, so that it could not be the mineral alkali, but true saltpetre (*Journal des Savans*, 1685). In Spain one-third part of the uncultivated lands are said to abound with this salt. I am not aware whether they are still wrought for it; but they were formerly in the following manner:—The ground was turned over two or three times in the spring, and in August they threw up the earth in heaps, and afterwards, putting it into vessels, poured water upon it, and crystallised the solution by evaporation. After the saltpetre was extracted, the earth was spread from whence it was taken, and, by the expiration of twelve months, had again become impregnated. The salt was again extracted, and, from time immemorial, the same earth is said to have produced annually the same quantity of nitre (*Histoire Nat. de l'Espagne*, p. 79. *French Transactions*, 1778). The earth in these countries, and in China, also contains a considerable portion of sea salt, from which the saltpetre has to be purified. By the Charter of the East India Company, granted in 1693, they were bound to supply Government annually with 500 tons of saltpetre at 38*l.* 10*s.* per ton in time of peace, and 45*l.* per ton in time of war.

The French are not dependent on any foreign source for their supply of this salt. They always manufactured it themselves; but formerly the home supply seems to have been very inadequate; so much so that, when its importation was prevented during the late war by the vigilance of the English cruisers, their military operations were threatened with a stoppage from want of powder. In this dilemma, Napoleon applied to those eminent scientific men whom he loved to keep about him, and added to his own dignity and power by patronising, and they proved equal to the contingency. "Sire," said Berthollet, who has the credit of first reducing the process complete, "within three days we will make our own nitre." A commission was forthwith issued, for the appropriation of all old walls, which were demolished, and the debris put into what were called nitre beds. Lime, wood ashes, and other suitable rubbish, were also, after a time, added to the mixture. This method was not altogether new; Glauber gives a description of the process, and Berzelius says that the Swedish Government compels every farmer to supply it annually with a certain quantity of old fences, which have been constructed of the wood best adapted to form saltpetre; and so rigid are they in the matter, that they will not accept a pecuniary composition in lieu, the object being to render the country independent of a foreign supply in the event of a war.

The saltpetre of commerce has to be purified of foreign matters before it is fit to be used in the manufacture of gunpowder. It is cleared of earthy impurities by dissolving it in water, when these sink to the bottom, and other lighter matters that rise to the surface are removed with a skimmer. Other salts that may be mixed with it, must next be got rid of; the chlorides of calcium and magnesium are separated by dissolving in hot or cold water; and, as they are more soluble than nitrate of potash, the latter crystallises, whilst the others remain in solution. Common salt (chloride of sodium) is removed by raising the solution to a high temperature and drawing it off. The nitrate being more soluble in water than the chloride, the latter is left behind. Other foreign salts are got rid of in a similar manner. Nitrate of potash, when pure, is colourless and inodorous, and has a cooling, sharp, saline taste. It fuses at about 616° Fahr., and at a high temperature suffers partial decomposition, which renders the fusion of it—the last process previous to its being manufactured into gunpowder—a matter of much care, lest it should suffer a partial change into potash and nitrate of potash by a portion of the oxygen and binoxide of nitrogen being driven off.

In the Government mills, the saltpetre, having been treble refined, is melted into cakes; and, should these have been kept for any length of time, they have to be very carefully brushed and cleaned, to remove all grit that may have accumulated about them, or any other matter calculated to produce an explosion during the process of manufacture. These cakes are then broken into pieces by a wooden mallet, and ground in the saltpetre mill until the pieces are sufficiently small to pass through a fine wire sieve, which is worked in a covered hopper or large funnel made of wood, and received into a tub below. A cushion is secured between the hopper and the tub, which keeps the finer particles of the salt from flying off.

The following method is adopted in the Royal Laboratory for pulverising saltpetre for the manufacture of rockets, portfires, &c.:—A fire-place is formed by a layer of bricks, surrounded with an iron hoop, in which a circular iron stand, or trivet, is firmly fixed to receive the copper pulverising pan. Loose bricks are built up to the height of the trivet outside—interstices being left between every brick for the free admission of air. Some fire is placed in the bottom of the fire-place, and charcoal added, until it nearly reaches the bottom of the pan. A gallon of distilled water, or as pure water as can be obtained, and 16 lbs. of saltpetre, are put into the pan, and which is placed over the fire. All impurities are removed from the surface as they rise. As soon as it comes to a thickness, like paste, the fire is quenched a little, to allow the evaporation to go on slower. Two paddles are then crossed in the pot, and used to keep the saltpetre in motion. These paddles are worked by two men, in a circular direction, so as to throw the saltpetre to opposite sides. When taken off the fire, this operation must be continued till the salt is cold. The fire is then still further damped, and the pan put on and off four or five times, that the drying may go on slowly and certainly. About the fourth time of placing the pan over the fire, the nitre becomes a powder. The last is called the drying heat. It is then passed through the sieve, and spread on sheets of paper to cool. When dry and cold, it is carefully put into the sieve bottom, and stored until required for use. The sieve bottom is a hoop, fitted with parchment, or leather, and can be used as a cover, or bottom, to the sieve, as may be required by circumstances.

Portsmouth, April 23.

ON A NATURAL ALLOY OF SILVER AND COPPER FROM CHILI: BY FREDERICK FIELD.—The alloy was taken from a mine about 20 leagues east of Coquimbo, and 6 from the Cordillera of the Andes. It was perfectly free from oxygen, sulphur, &c., and other substances usually found combined with metals in nature, having exactly the appearance of an artificially smelted product from a copper furnace. One hundred grains, taken from the centre of a large mass, was found to contain, on analysis—copper, 98.91; silver, 1.09. The quantity of silver, however, was very variable; one portion of the alloy had almost a whitish appearance, and, on being separated by the chisel and analysed, gave—copper, 92.40; silver, 7.60. I have a large specimen, weighing more than 1 lb., which I hope to have the pleasure of sending to the society's museum by the first opportunity.

\* In the year 1691 the saltpetre made in all the districts of France amounted to 3,647,767*l.* 1*lb.*; whilst the average imported into England between the years 1763 and 1769 was 3,563,036*l.*



## THE COST-BOOK SYSTEM AND THE STANNARIES.

BY JOHN HENRY MURCHISON.

It is of great importance to the mining interest, that the applicability of the Cost-book System to mining adventures should be accurately understood; I, therefore, propose to give a short account of its origin, and to take a cursory historical review of the Charters and Acts of Parliament relating to the Stannaries.

In the very early times, when the mineral riches of the south-west of Britain, and the adjacent isles, induced the Phœnicians to carry on commercial intercourse with the inhabitants, to such an extent as to excite the curiosity and jealousy of the Greeks and Romans, we have little reason to suppose that mining operations were governed by any special or definite laws. We are told, that during the Saxon dominion the working of the mines was entirely neglected, the time of those people being, no doubt, entirely occupied with intestine commotions, and subsequent wars with the Danes. It is said, that the Normans derived great emolument from working the mines in Cornwall, but this seems very doubtful; for in the reign of King John, the tin farm of Cornwall amounted to no more than 100 mks. (66l. 13s. 4d.), while that of Devon was 100l. The Jews were at this time sole managers of the mines, to the great regret of the barons and their vassals, the right of working the tin being wholly in the king, as Earl of Cornwall. King John being sensible of the languishing state of the manufacture, granted the county of Cornwall some marks of his favour, by relieving it from the operation of the arbitrary forest laws, and granting a charter to the tinners, which may be seen in the Rolls in the Record Office, in the Tower of London.

In the time of Richard, Earl of Cornwall and King of the Romans, the produce of the tin mines is described to have been very considerable, so that he derived great revenue from them; but the Jews being banished the kingdom in the 18th of Edward I., the mines were again neglected. Carew observes—"After this it happened that certain gentlemen, being lords of seven tithings in Blackmore, whose grounds were best stored with this mineral (tin), grew desirous to renew this benefit; and so upon suit made to Edmonde, Earle of Cornwall, some to Richard, King of the Romans, they obtained from him a charter, with sundrie privileges, amongst which it was granted them to keepe a court, and hold ples of all actions (life, lymme, and land excepted); in consideration whereof, the sayd lords accorded to pay the earle a halfpenny for every pound of tynne which should be wrought; and that, for better answering this tax, the said tynne should be brought to certayne places purposely appointed, and there peized, coyned, and kept, untill the earle's due was satisfied. Again, the lords of these tithings were, for their parts, authorised to manage all Stannarie causes, and for that intent to hold Parliaments at their discretion; and in regard of their labour, there were allotted unto them the toll-tynne within those tithings, which their successors do yet enjoy. This charter was to be kept in one of the church steeples within those tithings, and the seale had a pickaxe and shovel in saultier graven therein." This, and the charter of King John, were confirmed in the 33d of Edward I.

Pryce states that, by consulting some manuscripts, he finds that the tinners wrought for their tin by custom, until the 33d of Edward I., when they procured their charter, "which was obtained, at the solicitation of the Lords of Trethewy, Boswithy, Treverbyn, Pridaux, Trenans, Austell, Tremedry, Tregarriek, and Millack, who obliged their lands to pay assent, and do service to the law courts erected by the charter." He elsewhere found, by some manuscript papers of John Cooke, Esq., one of the stannars for Blackmore, 11th of Charles I., "that by occasion of certain disputes, and the tynners having great profits by their tynn wrought from time to time by custom, until the 33d year of King Edward I., A.D., 1305; it was then thought good for the tynners to procure by charter from the Prince, freely to grant unto them liberty to digge and search for tynn in any place where tynn might be found, and a court to determine all matters and causes between tynners." He likewise found this liberty expressly granted in the said charter, thus: "We have granted also to the tynners that they may digge tynn, and turf for the melting of the tynn, everywhere in our lands, moores, and wastes, and of all other persons whatsoever in the county aforesaid." Pryce further observes that Mr. Beare, in his *Baylyff of Blackmore*, a manuscript of ancient note, in his discourse upon what the tynners did before the charter was granted, says, "that they always used to worke, and search for tynn in wasterall grounds, and also in the prince's severall, where any tin might be gotten; having likewise liberty to digge, mine, search, make shafts, pitch bounds, and for tynne to worke in places of their most advantages, excepting only sanctuary grounds, church-yards, mills, back houses, and gardens, paying only to the prince or lord of the soyle, the 15th part, to aid for the toll of their tynn."

It is generally believed that the working of tin mines, either in *several* or *wastrel*, with the practice of *bounding*, followed the charter of 1305. Previous to working a tin mine, if it was in *several*, and not bounded, liberty had to be obtained from the lord of the soil; but if it was in *wastrel* and bounded, liberty from the bounder only was required. *Bounds* were limited pieces of land, enjoyed by the owners of them in respect of tin only, and were marked by digging a small pit at the angle of each boundary, which the bounder had to renew every year, by cutting away the turf, and removing the dirt, or rubbish, that might otherwise obliterate his land-marks. If the land was neither bounded nor enclosed, but a *wastrel*, or common, any one could mark out bounds there, and search for tin; but it was first required by the Stannary laws, to give three months' notice of his intention in the Stannary Court, and to the lord. In Devon, however, the constitution of the tinners enabled them "to digge in any man's ground, inclosed or unclosed, without license, tribute, or satisfaction." When a mine was found in Cornwall, the lord could work it wholly himself, or associate partners with him, or let it at a certain rent; or leave it unwrought if he pleased. Should he, however, not work it himself, and if he granted a license to another, on condition of receiving his fifteenth of the ore raised, the lessee extended his bounds as far as he thought to obtain the tin, and within that compass no other person could search. "The work thus found and bounded," says Carew, "lookes how many men doe labour therein, so many *doles*, or shares, they make thereof, and proportionably divide the gaine and charges." We can readily believe upon what principles these partnerships were formed, particularly as to the power of any one to retire from the adventure, after paying his proportion of the debts at that date, and receiving his proportion of the assets, as the case might be. It is clear that the Stannary Court was established specially for these undertakings—that no other had jurisdiction over them, the charters having granted to the tinners of Devon and Cornwall "a court to determine all matters and causes between tynners." Such appears to have been the origin of the Cost-book System.

In the 33d of Edward I., already referred to, the tinners of Cornwall were made a distinct body from those of Devonshire, previous to which they were united, and were accustomed to meet every seventh or eighth year on Heignton Hill, near Callington; to concert the common interest. Five coinage towns for Cornwall, and three for Devon, were then appointed, and each tinner allowed to sell his own tin; unless the king wished to buy it himself.

The privileges and laws of Cornwall were further explained in the 15th of Edward III., and its liberties confirmed and enlarged by Acts of Parliament made in the reigns of Richard II., Edward IV., Edward VI., Mary and Elizabeth. The society of tinners in Cornwall was divided into four parts, called from the places of the principal tin workings at that time, Foy-moore, Tiwarnall, Blackmore, and Penwith. One general warden was constituted to do justice in law and equity, with an appeal from his decision to the Duke of Cornwall in council only, or in his absence to the Crown.

Carew notices the Lord Warden as one "who supplieth the place both of judge of the law, and of a chancellor for conscience, and so taketh hearing of causes, either in *forma juris*, or *de jure et equo*." He received the power of appointing a Vice-Warden, to determine all Stannary disputes every month. He also was empowered to constitute four stewards—one for each of the Stannary divisions, who held their courts once in every three weeks, and decided by juries of six persons, with a progressive appeal to the Vice-Warden, Lord Warden, and the Lords of the Prince's Council. Carew states that, in matters of importance, concerning the whole Stannary, the Lord Warden, or the Vice-Warden, impelled a jury of 24 principal tinners, six from every division, returnable by the mayors of the four Stannary towns (Helston, Truro, Lostwithiel, and Liskeard), and whose acts bound the remainder; and according to Bor-

lase, 16 of these 24 Stannators, as they were called, were sufficient to enact any new law. We are told that in the reign of Henry VII., Prince Arthur, then Duke of Cornwall, made certain regulations relating to the Stannaries, which the tinners refused to obey; and for this, and other asserted irregularities, their charter was declared forfeited by the King on his son's death. It is stated that Henry, not finding the mines so profitable as he had expected, was prevailed on, for the sum of 1000*l.*, to grant a charter of pardon, and also some additional privileges, the principal of which was, that no new law should be enacted without the consent of 24 gentlemen tinners, six of whom should be chosen by the Mayor in Council in each of the Stannary divisions. In difficult cases, the Lord Warden, by commission, issued his precepts to the four principal towns of the Stannary districts, when six members were chosen from each, and the 24 stannators so chosen constituted the Parliament of tinners. This Charter was confirmed by the 20th of Elizabeth, but as the consent of the whole 24 stannators was found inconvenient, it was declared that the consent of 16 only should be sufficient to enact any law for the government of the mines, and of persons connected with them. Sir W. Raleigh, who was Lord Warden at this time, proposed that 24 more should be added, making in all 48, and that the majority of that number, or of as many as could assemble, should be enabled to make laws. In the reign of Charles II., it was arranged that every stannator should name an assistant, and these 24 assistants formed a kind of standing council.

By the Charter of the 10th of April, of the 33d of Edward I. (1305), it appears that the coinage towns then appointed were Lostwithiel, Bodminyan (Bodmin), Liskriet (Liskeard), Treueru (Truro), and Helston. In 1778, the coinage towns in Cornwall were Liskeard, Lostwithiel, Truro, Heiston, and Penzance, the last being added in the time of Charles II. The ancient Stannary towns of Devon were Tavistock, Ashburton, Chagford, and Plympton, the last being made such in 1328, and the three first are noticed as such in a charter of 1305, by Edward I. to the tinners of Devon. In 1837, the coinages of the Duchy of Cornwall were effected at Morwelham, in Devon; and at Calstock, St. Austell, Truro, Helston, Hayle, and Penzance, in Cornwall.

It will have been observed by the ancient Charters cited, that the tinners of Devon and Cornwall were exempt from all other jurisdiction than that of the Stannary Courts, except in cases affecting land, life, and limb. The meeting of the stannators was termed a Parliament, and when they assembled they chose a Speaker. The last Cornish Stannary Parliament was held in Truro in 1752, and was continued by adjournments to the 11th of September, 1753. From ancient times, Crokern Tor, on Dartmoor, was the place where the Stannary Parliaments of Devon were held, after which the court was adjourned to one of the Stannary towns. The Charter of Edward I., in 1305, either continued or appointed Lostwithiel as the prison for the Cornish tinners, and Liskeard Castle was appointed that for the Devon tinners, by a Charter bearing the same date, and granted to them. As a proof that the Stannary Courts considered they possessed great powers, Sir H. De la Beche mentions that Mr. Richard Strode (of the ancient family of Newenham Park), then M.P. for Plympton, was imprisoned for refusing to pay fines levied upon him in 1512, by the tinners' Court at Crokern Tor. It is also stated by several learned writers of ancient history, that this case of daring outrage gave occasion to the establishment and maintenance of some of the most important privileges of Parliament.

All these ancient Charters and Acts of Parliament, referred solely to the working of tin mines; and the Stannary Court had jurisdiction in cases only in which tinners were concerned. In later years, the necessity of extending its power over mines and mining transactions of every description—at least, in the county of Cornwall—having daily become more apparent, several county meetings were held, and a committee appointed, to investigate and report on the subject; the result of which led to the passing of the Act, 6th and 7th William IV., c. 106 (in August, 1836.) This Act is entitled, "An Act to make provision for the better and more expeditious administration of justice in the Stannaries of Cornwall, and for the enlarging the jurisdiction, and improving the practice and proceedings in the Courts of the said Stannaries." The preamble runs thus:—

Whereas there has existed throughout the Stannaries of Cornwall, a court in which the Vice-Warden has, in certain cases, wherein tin or tinners, or matters connected with tin are concerned, exercised original equitable jurisdiction; and whereas, there has existed a court in each of the Stannaries of Cornwall, called the Steward's Court, and in which the Steward of the Stannaries has exercised a common law jurisdiction in such like cases; and whereas, the jurisdiction so exercised by the Vice-Warden and the Steward, respectively has been confined to cases wherein tin or tinners are concerned; and whereas, in late times, lead, copper, and other metals, and metallic minerals than tin have been discovered in the county of Cornwall, and over the matters connected with the working for, and purifying and smelting of which lead, copper, and other metals and metallic minerals, such jurisdiction has not been considered to extend; and whereas, the various persons in the said county working, and interested in such lead, copper, and other metals and metallic minerals are greatly inconvenienced in their disputes, in cases where such metals and metallic minerals other than tin are concerned, and are put to great inconvenience in obtaining redress therein; and whereas, it is expedient to unite the Court of Equity of the Vice-Warden with the courts of common law of the Steward of the said Stannaries, and to extend the jurisdiction of the court to, and over all metals and metallic minerals in the said Stannaries, and to over all transactions connected therewith in the said county of Cornwall, in manner hereinafter mentioned, and also to confirm, alter and enlarge the powers of such court in various particulars, and to make other provision, than heretofore for the hearing of appeals, and writs of error therefrom; be it therefore enacted, &c.

By this Act, the courts of equity and common law are united, presided over by one judge—the Vice-Warden—who shall be a barrister of not less than five years' standing. From his orders and judgments, an appeal lies to the Lord Warden, assisted by not less than three members of the judicial committee of the Privy Council, and from thence to the House of Lords. It is also enacted, "that in case the Vice-Warden shall, in any proceedings instituted for that purpose, make any decree, or decretal order, against any person for the payment of any money due, or payable, in respect of the working or management of, or the providing goods for any mine worked for any metal, or metallic mineral; and the person against whom such order, or decretal order, shall be made, or any person in trust for him, shall have any share, or interest, in such mine, and shall not pay the sum so decreed to be paid; it shall, and may be lawful, for the Vice-Warden, under such regulations, and in such way as to him shall seem fit, to cause a sale of such share or interest, or of so much thereof, as shall be necessary to raise such sum, and the costs attending such sale."

The Act provides that the Stannaries Court and the Vice-Warden shall have jurisdiction throughout the county of Cornwall only, and be held at Truro, in the said county, and shall be a Court of Record, &c. It also provides that all Acts, statutes, laws, liberties, privileges, customs, rights, usages, and freedoms in force, in any of the Stannaries of Cornwall at the time of its passing, shall continue, and have the same force and effect as if this Act had not passed, except so far as opposed to the laws of the realm, or inconsistent with the provisions therein contained. No mention is made of the county of Devon; but inasmuch as none of its ancient privileges are repealed, or modified, I presume they are still in force, and continue to protect the mining interest in that part of the kingdom.

It is quite clear that only the Stannary Courts can acknowledge the "Cost-book System" in the conducting of mines; and that, therefore, it is difficult to say by what authority mining adventures are formed upon that principle for carrying on their operations beyond the counties of Cornwall and Devon. The Stannaries were originally constituted for the purpose of regulating the bounds, and of settling all the disputes of the tinners; and this jurisdiction was extended, as we have shown, to all other mining transactions and operations in the county of Cornwall. Some persons refer to the following clauses of the 7th and 8th Vic., c. 110, in support of their views, that the Cost-book System can be carried out in other parts of the country:—

63. Provided always, and be it enacted, that nothing in this Act contained, shall extend, or be construed to extend, to any partnership formed for the working of mines, minerals, and quarries, of what nature soever, on the principle commonly called the Cost-book Principle.

64. Provided always, and be it enacted, that nothing in this Act contained shall extend, or be construed to extend, to partnerships in Ireland, commonly called "anonymous partnerships," formed under, and by virtue of, an Act passed in the Parliament of Ireland, in the twenty-first and twenty-second years of the reign of his late Majesty, King George III., intitled, "An Act to Promote Trade and Manufactures, by Regulating and Encouraging Partnerships."

I am at a loss, however, to understand how they construe these provisions to imply the extension of the Cost-book System to "all parts of the United Kingdom." But I shall not encroach further on your columns to argue this question at present.

One of the great features of the Cost-book System is, that every partner is allowed to part with his share without the consent of his co-partners, which is contrary to the regulations of the Joint-Stock Act. "It is understood," says Collier, "that any adventurer may relinquish his share,

and with it his liabilities, at least as far as his partners are concerned, by giving notice of relinquishment in writing to the purser, and settling his account with the mine." But, on the other hand, it must be borne in mind that it is impossible to limit the liability of partners under the Cost-book System; the creditors of the company always have a claim upon any one who signs the cost-book, no matter what arrangement may exist between the partners. For example, if a company should be formed under the profession that "no further calls will be made," or with "no further liability" to the subscribers, or even with the announcement that "no forfeiture of shares" will take place, it is manifest that it is not according to the Cost-book System that such privileges can be enjoyed; for the Stannaries' Court acknowledges, and has done so from its earliest institution, a rateable division of gains and charges; and in case of the failure of the company, or otherwise, a creditor can sue any adventurer to recover a debt incurred by the purser, or the adventurers, in the necessary working of the mine; while so far from there being no power of forfeiture, and that an arbitrary one, too, by the 18th clause of the 6th and 7th Wm. IV., c. 106, the Vice-Warden has the power of selling the shares of such partner, or any number of them, if just payment is refused.

In his *Treatise*, Mr. Collier has given a digest of the most important cases that have appeared in the law courts, and every one interested in mining adventures conducted on the Cost-book System would do well to study this, as well as the whole work, although I may not agree with him entirely. He sums these cases as follows:—

That a mining company is a trading partnership, a share of which may be acquired without such a conveyance as is necessary to pass an interest in land; that it differs from ordinary trading partnerships, in not being founded on the *delectus personarum*, a difference which limits the powers of mining partners; that the mere constitution of such a company is no evidence of an implied authority from one partner to another to pledge his credit, by drawing bills of exchange, or borrowing money, even on the greatest emergency; that such constitution is, however, evidence for the jury of authority to order necessities on credit; that wherever there is any question for the jury of implied authority, either to a mere partner, or to a manager, the proper direction to them is to consider whether it be proved that such authority is necessary to the carrying on of the concern, or usual in similar concerns.—pp. 126, 126.

In conclusion, I would again use Mr. Collier's words—"It is clear that a company cannot escape from the provisions relating to joint-stock companies, if they act as a joint-stock company, by merely calling themselves a company under the Cost-book System, or setting a cost-book, or entering into a deed of partnership, declaring that the mine shall be conducted on the Cost-book System."

## ON THE PURIFICATION OF COAL GAS.

At the Society of Arts, on Wednesday evening last, a paper, by Mr. Laming, was read on the above subject, which commenced by observing that it was surprising that the perfect purification of gas, so important both in a sanitary and commercial point of view, should have excited so little interest in persons capable of investigating the subject—that now, after nearly half a century, the problem remains as far from a satisfactory solution as ever. That the primitive and palpably imperfect purification by lime should be still universally prevalent, may appear blameworthy on the part of the officers to whom public companies have entrusted the internal arrangement of their works; but when the extent and diversity of the duties of a gas engineer, and the purely chemical character of gas-making, are taken into consideration, it rather excites surprise that the directors have not seen it prudent to aid their engineers, by appointing a competent and intelligent chemist. The author then alluded to inventions calculated to aid the lime in its purifying powers, particularly that of Mr. Lowe, of the Chartered Gas Company, consisting of a washing vessel, filled with breeze, the most useful of them all, termed by him a scrubber. This vessel removes the ammonia, but does not take away the sulphuretted hydrogen, for which purpose the lime purifiers are still as necessary as before. In the use of lime there is an enormous loss, as the sum total of the really effective lime out of the whole quantity employed does not exceed 33 per cent. The object of Mr. Laming is to convert the ammonia and sulphur into sulphate of ammonia, and pass the carbonic acid into the atmosphere. The process has been successfully tried in Paris, and in the Chartered Company's Westminster Works with 7000 cubic feet of gas per hour; and the author is now extending his operations there with success, with purifiers 10 ft. square. The purifying material through which the impure gas is first passed withdraws from it 17 parts ammonia, 17 sulphuretted hydrogen, and 22 carbonic acid. It consists of a saturated solution of muriate of iron, decomposed by chalk, or lime, into muriate of lime and hydrated protoxide of iron, and then mixed with breeze, or sawdust, to absorb it.

During the mixing, the iron becomes highly peroxidised by the atmosphere—a result greatly facilitated by the porosity of the resulting mass, as well as by its spontaneously elevated temperature. The affinities called into play, on passing impure coal-gas through this very porous material, placed instead of lime in the ordinary lime purifiers, are as follows:—The impurities are dissolved in the moisture of the absorbent matter, and which is forcibly retained by the hygroscopic nature of the muriate of lime, also dissolved in it. The sulphuretted hydrogen then combines with the peroxide, to form water and sesqui-sulphure of iron. The ammonia, at the same time, is attacked by the carbonic acid, giving up in exchange the sulphuretted hydrogen with which it is in part combined; while in proportion as the ammonia and carbonic acid unite to form proto-carbonate of ammonia, the latter salt reacts on the muriate of lime, with the production of muriate of ammonia and carbonate of lime. When none of the peroxide of iron and muriate of lime remains unchanged, the purifying process for a time is at an end. The vessel which contains the materials is then thrown out of connection, and a current of atmospheric air transmitted through the materials. In summer the ordinary temperature of the atmosphere is sufficient, but in cold weather the proper temperature for chemical action may be communicated artificially; or, if the materials are thrown into a heap, the temperature will spontaneously rise, and cause the required affinities speedily to become energetic. These affinities in the revivification are as interesting as those by which the gas is purified. The oxygen of the air changes the sesqui-sulphure of iron into a sulphate; and this salt, and the carbonate of lime, reciprocally decompose each other, forming sulphate of lime and carbonate of the peroxide of iron; but as artificial carbonate of iron is not persistent in the presence of the oxygen of the atmosphere, it becomes quickly changed into hydrated peroxide of iron—the carbonic acid being liberated and escaping into the air.

These transformations, brought about solely by the action of the atmosphere, reproduce the purifying material in all its pristine energy, with this difference, that as the process began with muriate of lime, mixed with the hydrated metallic oxide, the process is continued by that oxide mixed with precipitated sulphate of lime, which acts on the carbonate of ammonia in precisely the same manner as does the muriate of the same base. The time required for revivification is only an hour or two, and the process has been repeated 15 times; a period will, however, arrive, when the material must be well washed to get rid of the ammoniacal salts formed, when it will be restored to its pristine condition.

The advantages obtained by this process are, that the gas is completely purified with an increase in illuminating power of fully 8 per cent; the materials are inexpensive and susceptible of repeated use an indefinite number of times, with little labour; they give no unpleasant odour when removed out from the purifying vessels; the impurities are disinfected and converted into marketable products of great value; the materials oppose less resistance to the passage of the gas than lime, and the quantity of gas produced from a given weight of coal is considerably augmented, with its quality improved, and the wear, tear, and cost of apparatus, generally an important item, reduced to an unfluctuating minimum. Liebig conceives that peroxide of iron is the purifying agent of the human blood, absorbing oxygen in the lungs, and passing as arterial blood to the various parts of the system, where it combines with organic matter, and evolves heat with the production of carbonate of the protoxide of iron, in which state it returns as venous blood to the lungs, and is then decomposed with evolution of carbonic acid and re-formation of peroxide of iron, and so on as before. If this be correct, the resemblance of the two processes is curious and interesting.

FILE CASTING.—Mr. E. Ripley, Troy, has patented an invention for "chills," for casting rasps, files, &c., the nature of which consists in constructing the die of strips of metal, in such a manner as to ventilate the die and mould, so as to allow the metal to run freely and fill the teeth to a degree of point and sharpness not heretofore attained in casting iron. The patentee claims "The method described of casting rasps, files, graters, &c., by means of a series of chill dies, constructed and used as herein described, the essential in the construction of such chills being that there is one piece for every series of teeth, and that the latter are cast in indentations formed between the chills, the same being formed substantially in the manner and for the purpose set forth."

A *Treatise on the Law Relating to Mines*, by R. P. Collier, Recorder of Penzance.

<sup>1</sup> *Survey of Cornwall*, page 17.

<sup>2</sup> *Mineralogia Cornubiensis*, page 138.

<sup>3</sup> This, and the Charters of King John to the tinners of Devon and Cornwall, may be seen in the Record Office, in the Tower of London; and *see* similar of them are given by Sir H. De la Beche in the appendix to his *Survey of Devon and Cornwall*.

<sup>4</sup> *Survey of Cornwall*, page 13.

<sup>5</sup> *Survey of Cornwall*, p. 17.

<sup>6</sup> *Survey of Cornwall*, p. 18.

<sup>7</sup> Borlase, *Natural History of Cornwall*, p. 192.

<sup>8</sup> De la Beche's *Report on Devon and Cornwall*, pp. 617, 618.

<sup>9</sup> Lysons's *Magna Britannia, Cornwall*, p. 8.

<sup>10</sup> *Report on Devon and Cornwall*, p. 619.



## Original Correspondence.

## NASMYTH'S DIRECT-ACTING STEAM HAMMER.

SIR.—I observed, in your Journal of the 13th April, the following paragraph:—

"WOLVERTON LOCOMOTIVE DEPARTMENT.—The steam-hammer used at Wolverton is occasioning a loss of about 1200l. per annum to the London and North-Western Company. The original cost of the hammer, and the cost of the use of it, is stated to have been upwards of 2000l. I learn that the expenses for materials and labour, from the 1st of December, 1849, to the 28th February of the present year—that is three months—were upwards of 400l.; while the amount credited on account of the steam-hammer, for the period, was under 110l.—BALLAST ENGINE CLEANER."

The statement, no doubt, being grossly false, I take the liberty of sending you the enclosed copy of an official return of the earnings of our steam-hammer, employed by the same railway, at their works at Crew, Cheshire, which I trust will prove to you that the employment of the efficient and energetic services of my patent steam-hammer is not a losing concern to the northern division of the London and North-Western Railway. It is an exactly similar hammer to that at Wolverton; and I cannot imagine that the management of it can be so inferior to that at Crew, as would appear by the enclosed statement. As the publication of it will, no doubt, tend to do me some injury, should you think proper to allude to the results at Crew, as enclosed, I shall feel much obliged. The fact of our having made upwards of 280 steam-hammers for all parts of the world, and many of those successive orders by the same party, owing to the high satisfaction and profit they have derived from the employment of this machine, will, I hope, furnish the most satisfactory evidence of the value of this invention, which you were among the very first to direct the attention of the iron-working public to its importance and usefulness. Messrs. Maudslay and Field, the celebrated engineers of London, have ordered from us a third steam-hammer, so great has been the satisfaction and commercial advantage they have derived from the two they have had in succession from us. The Low Moor Iron Company have had four in succession for the like reasons. Such facts as these set at rest all doubt as to the value of the services of this invention.

JAMES NASMYTH.

Bridgewater Foundry, Patricroft, April 19.

Statement of iron made by the employment of Nasmyth's, Gasbell, and Co.'s Patent 30-ton Steam Hammer, at the Works of the London and North-Western Railway Company, Crew, Cheshire, from 25th June to 23rd December, 1849:—

[Iron charged at the same prices as from Mersey Forge, Liverpool.]

	Weight.	Price.	Amount.
3513 rim pieces for wheels	923 1 10	£0 14 0	£646 6 9
Cross-heads, piston-rod moulds, pedestals, and spring buckle moulds	447 3 25	1 5 0	559 19 4
Crank-pin moulds and washers for 5 ft. and 6 ft. wrought wheels	713 0 30	—	891 9 5½
146 slide bars, steels	127 3 15	—	159 17 1
14 forged hammer tines	85 2 5	1 4 0	102 13 2
V pieces for ditto	111 1 35	—	133 15 7
Connecting rod end moulds	168 2 24	9 18 8	157 9 4
Framing plate ends and brake shafts for tenders	23 1 16	0 17 6	20 9 4½
Forged hammer bar-iron for eccentric rod straps, &c.	90 1 21	0 16 0	72 7 0
Axles for 3 ft. 6 in. wheels	571 3 0	0 17 6	500 7 5½
Spoke moulds for wheels	1172 2 13	—	1026 0 9½

Total value of new iron £2720 13 6

Forgemen's wages, and making and repairing tools for six months £256 14 11½  
Value of coal for six months 413 0 9½  
Value of wrought-iron scrap, at 5s. per cwt. 2273 18 0½

Total £1996 15 5½

Weight of new iron made in six months Cwts. 4436 1 7  
Average weight of iron made per week 170 2 14½  
Weight of coal used in six months 18,043 1 0  
Average weight of coal used per week 693 3 24½  
Weight of coal used to make 1 cwt. of iron 4 0 7½

\* Most of the scrap is Low Moor iron, which is the reason why 5s. is charged—ordinary scrap would be worth 3s. 9d. to 4s.

## IRON FOR RAILWAY PURPOSES.

SIR.—Having read the letter of a "Civil Engineer," in your Journal of the 6th April, and also a letter from Mr. Freeman, in that of last week, I am sorry to find that both these gentlemen have fallen into a slight error, I believe, however, in both cases, quite unintentional. What I particularly refer to is, that I am represented as having made reference to Low Moor iron by name, in the paper read before the Institution of Civil Engineers. This I did not do; which will be fully corroborated by the paper itself, when published by the institution.

At the close of the meeting, several gentlemen pressed around me at the table, asking questions on the different subjects which had been brought before the meeting. One of them was very pressing to know what Yorkshire iron I referred to in my paper; for some time I declined answering the question, my principal object being to deal with the manufacture of iron alone, quite irrespective of who were the manufacturers. The gentleman referred to, however, pressed his former question with so much point and perseverance, that I did say the Yorkshire iron was forwarded to me by an iron-merchant, and invoiced as Low Moor iron; but, beyond this, I would not say more.

Again, I did not say, "That the material had, compared with the manufacture, little to do with the quality." But what I said was, that iron possessing the peculiar property of a fine granular texture, was mainly, if not exclusively, dependent on the peculiar mode of manufacture, and not upon the material; and that this opinion was fully demonstrated by the samples of Staffordshire and Yorkshire iron before the meeting.

On the night when the discussion on my paper came on, I exhibited a piece of iron made from the superior mineral of Nova Scotia, manufactured in every process with charcoal. The fracture of this piece of iron showed that compression had destroyed the fibre, and changed it into the crystalline, and that even this superior quality of iron was not exempt from the fatal consequences of compression; and then, addressing myself particularly to the respectable agent of the Low Moor Company, I said that I did not think a better sample of iron could be produced, not even from the Low Moor Company itself.

These were the only two instances in which I referred to the Low Moor iron at all; and I think they were both complimentary of the quality of iron manufactured by that house. I certainly am obliged to both the "Civil Engineer," and to Mr. Freeman, for their very flattering testimony to the value of my efforts on so important a subject.

Wolverhampton, April 18.

G. B. THORNEYCROFT.

## IRON FOR RAILWAY PURPOSES.

SIR.—The system of puffing up rails of one particular make or quality, and decrying those of another, in which one opulent ironmaster has not blushed to occupy the foremost position, has already been carried to a sufficient extent, through the medium of your columns, to weary and disgust those of your readers who are best qualified to form an impartial opinion upon such a subject; and, therefore, the sooner the unprofitable correspondence, with all the personalities that have been connected with it, is brought to a close, the better it will be for every one concerned.

To railway companies, who, I apprehend, are the parties most deeply interested in the question of quality, this question is of vital importance; and, if the attention of both Welsh and Staffordshire ironmasters was directed towards the production of rails of the best possible quality, instead of trying, as I, fear, too much the practice, how bad a rail can be made so as just to escape rejection, railway companies would have less occasion to complain, and would, in all probability, make little distinction between Staffordshire and Wales, in giving their orders; although, in my opinion, however it may be opposed to the opinion of others, Staffordshire iron, superior as it is in quality to Welsh, for many purposes, is not so well adapted for rails, when the traffic passing over them is at all heavy. But, be this as it may, the attempt that has been made to establish a character for Staffordshire rails, at the expense of Welsh ones, may safely be characterized as most unworthy conduct, on the part of those that have been engaged therein.

The testimony of Sir John McNeill, as referred to by the writer of a letter in your paper of the 6th inst., may certainly be considered quite as impartial as that of the gentleman referred to, by the same writer, as the advertiser of his own merits, although, in point of impartiality, there is, probably, little difference between the gentleman that advertises his own merits as a maker of rails, and the gentleman that advertises the superiority of his own judgment in selecting rails of the weight and quality best adapted for railway purposes.

When it is stated, "that the Great Western Railway has been laid down three or four times," it is not made apparent whether the Irish or English "Great Western" is referred to; if the latter, the statement is untrue, and

it is difficult to suppose such a statement to be applicable to the former, which is, comparatively speaking, a new line of railway.

No conclusion, in reference to quality, can be drawn from the statement that "75 lb. rails, laid down in 1844, over which trains have been running 14 times daily since, are quite as serviceable as when they were laid down, unless we were informed upon the subject of weight and speed; and, even then, a four years' character is not sufficient to establish a claim to superiority, inasmuch as Welsh rails, of notoriously bad quality, are now, after four years' wear, upon a line where the number of trains per day is as great, the speed higher, and engines heavier than on any other in the kingdom, as good as when first laid down. I believe it only requires experience to satisfy those who have adopted a very heavy rail, that they were wrong in doing so. I consider one-third of the weight, and, consequently, one-third of the cost, of Sir John McNeill's Great Southern and Western rails completely thrown away, and have no hesitation in saying that rails weighing one-third less would be found to wear, at least, one-third longer, under similar circumstances. There are many rails now in wear, upon a line where trains are heavy and numerous, and the speed very great, that weigh only 56 lb. to the yard, and are in excellent condition after 12 years' wear; whereas, many of Sir John's would not last 12 months upon the same line, or would, at least, be in an equally deteriorated condition with many heavy rails that have already been tried upon it.

Bristol, April 22.

A RAILWAY MAN.

## COPPER AND ITS IMPURITIES.

SIR.—Having, on a late occasion—i.e., the destruction of the western gateway to the Royal Hospital at Greenwich—procured some of the copper bands which formed the geographical ornaments of the two massive globes which surmounted the pillars of its palatial entrance, in order to institute a comparison of copper, fabricated, undoubtedly, a century ago, with that which is now found in the market as sheathing for ships, and the other multifarious uses of this metal, which having, to a certain extent, performed, you may consider the results of importance sufficient to give them a place in the *Mining Journal*. Half-a-pound of these orbicular copper bands, furnished to me in part by Mr. Lee, the inspector of works to the Hospital, when fused, cast, and rolled out into a sheet of  $\frac{1}{16}$ th in. thick, was compared with a piece of copper sheathing which had been out to and home from India, rather indifferently preserved. The density of the olden sheet was 8895, and that of the sea-worn piece 8607, water being taken at 1000; the colour of the two so much the same, when cleaned and polished, as not to be distinguished the one from the other. A careful analysis of the two presented the following results:—The olden specimen so nearly pure, as not to furnish otherwise than mere traces of lead and sulphur; whilst the modern specimen contained 2.54 grains per cent. of lead, 1.28 of antimony, a trace of iron, and .72 of sulphur.

The opportunity of acquiring a comparative acquaintance with the metallic purity or impurity of copper made 100 years ago, and whence ship sheathing was made, of whose durable qualities we hear so much, not only from the investigations of Mr. Prideaux and others, but exterior to the authority of these labourers in the common field of useful inquiry, cannot readily be estimated, as we could not depend upon any dissimilar source than the delapidation of some architectural monument, the date of construction of this particular gateway being 1756, as found in a memorial under one of the stones, as furnishing an undoubted metallic specimen of this especial date.—WM. RADLEY, Ch. E.: Clapham, April 21.

## COPPER SHEATHING.

SIR.—In your last Journal, Mr. Prideaux states that it has not been possible to procure any of the very durable Norwegian copper mentioned by me in the several letters which have from time to time appeared in the *Journal* on this subject. In reply, I beg to state that the moment it was intimated to me that the authorities at the Admiralty wished to have specimens of Norwegian copper, I informed them of the channels through which it could be obtained. Further, about nine months since, a specimen of about 10 lb. weight was forwarded from me of a cargo of 80 tons, lying in the River Thames. I requested this might be analysed and examined, when I was informed they would not go to the expense, but for any information I might give they would feel obliged. At this time they were about to contract for a large quantity of English tough cake; I suggested the practicability of trying a few tons of the Norwegian, but being bound by the strict tenor of the words of the contract, I was informed no experiments could be made. However willing Government officials are to receive information from private persons, I have never found they have been willing to adopt any practical suggestions which involved a change or reduction in the cost or management of any branch of the service to which they might be attached, nor have they been disposed to acknowledge, in any tangible way, the time, trouble, and information, which they have thus obtained from well-meaning individuals, who probably have thought they were rendering a benefit to their country, by giving up the results of years of labour and hard study to the gentlemen of the bureaucracy. The Government has several officials in Norway, and might, if they pleased, obtain copper through any of their consuls; and it is too much to tax private individuals to do the duty for which these people are paid. In the few transactions I have had with all and every Government department, I have found it has resulted in nothing but a loss of time and waste of labour. Mr. Prideaux's experience probably has been the contrary.

Paddington, April 24.

GERMANICUS.

## THE CHANNEL, GODWIN, AND TONGUE SANDS.

SIR.—There are two letters in your Journal of the 6th and 13th inst. headed as above—the former from Mr. Shepherd, C.E., attacking merchants; the latter from "Observer," abusing underwriters, because they do not sufficiently look after their individual interests in preventing, by the erection of lighthouses, the fearful casualties that are annually taking place in the narrow waters of the English Channel, which no doubt would be very desirable; but your correspondents ought to know that neither merchants or underwriters care about the matter, as the one pays a premium of insurance to protect himself against loss of property, while the other accepts in order to make a profit; and, were the dangers tenfold greater than they are, neither would trouble themselves, in the way your correspondents suggest, so long as they can carry on business, to pay and receive in consideration for the risk, to their mutual satisfaction. As to loss of life, it never for a moment enters into the category of their thoughts further than is generally felt by the rest of the community for any great calamity, such as a smash upon a railway, the foundering of a ship at sea, or the explosion in a coal mine, either of which is a very terrible thing, and it is the duty of all, if possible, to prevent a recurrence of them. I, therefore, wonder not at your correspondents taking up the columns of your *Journal*, in order to put a stop, if possible, to the frightful loss of life and property that is annually taking place between the Isle of Wight and London, in witness of which the loss of the *Royal Adelaide* steamer, from Cork to London, on the Tongue Sands, with no less than 250 souls on board, at a season of the year when occurrences of this nature are not so much looked for, considering that the days are now 16 hours long, giving, as it does, the opportunity of vessels getting through difficult navigation with less risk. The whole case, however, is one involved like a great many others in a question of £ s. d. Philanthropy is out of the question; and Mr. Shepherd may build as many lighthouses as there are sands between the Downs and Gravesend, but they would not materially have the effect of lessening the risks and perils of navigation, so long as we have gales of wind, thick weather, and dark nights, with drunken and incompetent captains. There are lights in abundance all round the coast; the shipping interest are already calling out against being taxed so heavily by the Trinity House; and many competent to judge say that the multitude of lights confuse, instead of assisting the mariner. We have lights, for instance, at Dungeness, Dover, South Foreland, North Foreland, North Sand Head, South Sand Head, Gull Stream (three lights on the Godwin Sands), Boulogne, Calais, Cape Grigney, Margate, and the Nore; and yet, though they are all within 30 miles of each other, they do not prevent hundreds of vessels being cast away within speaking distance of them.

If your correspondents were to use their exertions and influence elsewhere, it is possible it might do some good, though I think it extremely doubtful, from the incapacity of individuals forming the directions of the companies who ought to be incensed to their duties. I allude more particularly to the navigation companies having the management of these passenger ships, and the South-Western Railway Company. For instance, it would be easy to make arrangements to stop short at Southampton with the railway company; the navigation company would be able to do with half the number of vessels, the outlay would be considerably less in point of capital, coaling would be less, insurance would be less, lights and pilotage would be less, and less wear and tear. The railway company would, if they went to work like men of business (which they are not), get an im-

mense accession of traffic, both in goods and passengers; and when we consider that they can take down to Southampton a train of 150 tons of goods, including every possible cost, for less than 10l., and leave a profit, it does seem an anomaly that they have never attempted to bring about so desirable an object for their own sakes, let alone the public, and the misery that is annually occasioned by the loss of hundreds of valuable lives and property, all of which might have been prevented, if utter ignorance and selfishness together had not prevented such a scheme from being carried out. As it is, the Dublin Steam-Packet Company have lost their vessel, uninsured, with a valuable cargo, and still more valuable lives, all of which might have been saved if they had stopped short at Southampton, instead of entering the narrow and dangerous waters of the Channel, between the Isle of Wight and Gravesend. I trust that some of the shareholders of the concerns above alluded to will see these observations.

Royal Exchange, April 23.

A MERCHANT.

## INCLINED PLANES ON CANALS.

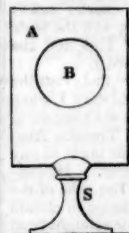
SIR.—In your *Journal* of last week is a notice of an inclined plane being in course of construction on the Monkland Canal, which is stated to be "the first ever employed in this country." This is a mistake, as an inclined plane for raising the barges from a lower to a higher level, and vice versa, has been in operation on the Kidwelly Canal up the Gwendraeth Valley, in Carmarthenshire, for the last 16 or 18 years. The barges are floated into caissons on wheels, which traverse on a double line of rails, in the same manner as coal waggons do on inclined planes. As each caisson is of the same dimensions as the other, and contains the same quantity of water, they counterbalance each other, and as each barge displaces a quantity of water equal to its own weight, the equilibrium is not disturbed, and, consequently, but little power is necessary to take a barge up or down. The ropes by which the caissons are moved pass round a drum, whose axis is perpendicular to the plane of the incline. As it is 14 years since I had a cursory view of the apparatus, I do not now recollect how it was set in motion; but I think it was effected by pumping water into the upper caisson sufficient to overcome the resistance, and bring the lower caisson to the top of the incline. No steam-power was used or required, as the water requisite only wanted raising about 2 feet. But this inclined plane was not the first used for the purpose of transferring canal barges from one level to another, for something of the kind was constructed, "long, long ago," by Mr. Reynolds, of the Coalbrook Dale and Ketley Iron-works; but whether or not it is still in existence I do not know.

April 23.

LUSOR.

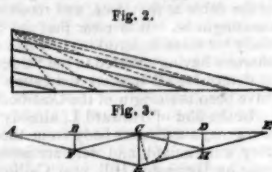
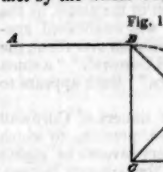
## THE MATERIALITY OF THE ELECTRIC FLUID.

SIR.—The material nature of the electric fluid is shown by the following experiment:—A represents a sheet of glass, with metallic coatings, B, on each surface, and mounted on the stand, S. When the glass is perfectly clean, and an attempt made to charge one of the metal coatings, without placing the other in electric communication with the earth, the former will be found to refuse the fluid. Let a metal knob, or the knuckle, be now held near the second coating, and it will be found to discharge its fluid, spark for spark, as the other receives the charge from the conductor. By this means the one coating assumes the positive state, and the other the negative. This effect cannot be explained in any way on the supposition that electricity is immaterial, and that the coatings have merely assumed a new state or condition; for such a change, if it occurred at all, must take place within the substance of the metal coating itself. It must be a molecular change of some kind—either an alteration in the position or nature of the particles of the metal, and as nothing has to be discharged, connection with extraneous objects should be unnecessary. The second or negative coating should as readily assume the new state without as with this connection. The effect is, however, readily explained by the existence of pyrogen; for as the one coating receives a quantity from the conductor, the other coating must discharge an equal quantity on the metal knob, or the knuckle, presented to it; and if there be no means of escape for the fluid from one coating, the other cannot receive a charge—the escape of the pyrogen from the one side being necessary to admit of a receipt of it on the other. This experiment is complicated, to a small extent, by the fluid being forced from the second coating on to the surface of the glass, or into the atmosphere, by the inductive influence of the charged conductor of the electrical machine, so that the other coating will receive an occasional weak spark; but this, although resulting from the same cause, is a distinct effect from that referred to above, and must not be confounded with it; it only takes place to a limited extent. This is the third experiment I have published, proving the existence of the electric matter; the other two will be found in the *Journal* of March 31, 1849, p. 157.—JOHN J. LAKE: Ordnance-office, Portsmouth, April 23.



## TUBULAR BRIDGES.

RESPECTED FRIEND.—Your correspondent, "An Engineer of the Next Generation," is certainly not fit for an engineer of the present generation, which I will proceed in the endeavour to show. His laboured calculation in the first portion of his article, referring to figure 1, is correct, and confirms my statements; but why he has thought proper to make such a long dissertation thereon, I am at a loss to imagine. With regard to his observations on the subject referring to figure 2, I admit there may be a little economy in the weight of material, by adopting his idea of all the bearing or suspending bars proceeding from the top of the tower, in manner shown by the dotted lines; but he is, in my opinion, quite in error as to superior inflexibility, as the first suspender of great length would have no support, consequently tend to assume a curved line; whereas the plan I propose keeps all the suspenders in a perfectly straight line. I, therefore, think that the superior inflexibility of my plan more than compensates the additional quantity of material requisite to obtain the same degree of power. Your correspondent is mistaken in supposing a load on one side would lift the corresponding part on the other side, because that tendency would be prevented by the gibs and keys with which the suspenders are attached to the saddle bars—consequently the strain on one side will be met by the whole weight of the opposite portion of the bridge.



With regard to his observations on the subject, referring to fig. 3, he appears to me to have fallen into a serious error. He says the centre is not the weakest point; and then adds remove the weight from C to B, or D, the strain would be increased 50 per cent.; whereas I assert that the strain would be diminished 100 per cent. (no trifling difference)—viz.: 1 in the middle at C would be 4, at B or D 2, instead of 6. According to your correspondent's reasoning, take a steelyard, and place a given weight at the middle of the beam (say) equal to 1, remove it halfway towards the fulcrum, or point of rest, will increase the strain; but it is very evident the reverse is the fact. The nearer you move the load to the fulcrum, or points of rest, in that proportion is the strain of the load diminished; but your correspondent, I consider, is also in error in supposing the strain from A to F, and H to E, is six; it can, under no circumstance, be more than 4—viz.: 2 on C, 2 on E; and it would require exactly, or nearly so, the same power to break it at that point as at C—to prove which let him make two beams one-half the length of the other, with a support in the middle of the under part of the same proportionate depth, and then attach a string, or wire, to each end, passing under the upright, or support, and he will find they will each support the same weight. He also confidently states that a load at B and D, the strain would be as follows:—From F to G, 6; F to H, 4; F to C, and C to H, 2; whereas a load at C would produce a strain on A G, and G to E, 2, there would be little or no strain on the short bars from C to H, or C to F. The principal use of the short bars is to resist the load when moved from C to D, or B. In either case, C would become the fulcrum, or resting point, the load 1 at D, would cause a strain of 2 on C, and 2 on E. So much for your correspondent's accuracy in calculation, which I think justifies me in the conclusion, that he is not yet fit for an engineer of the present generation, and that his laboured communication is of but little or no use, though well intended.

Stangate, Lambeth, 4 mo., 23.

THOMAS MOTLEY.



## ON THE PURIFICATION OF COAL GAS.

Sir,—I have just observed a communication, in your Journal of the 18th inst., from Mr. W. Phillips, for a plan of purifying gas by means of precipitates, or hydrated peroxide of iron, made by decomposing sulphate of iron with lime. I beg to say I have a patent for this and other methods of purifying gas, and shall be much obliged by your inserting this letter in your Journal, to prevent my patent being unintentionally infringed.

Deptford Chemical Works, April 20.

F. C. HILLS.

## WIRE-ROPE CONDUCTORS.

Sir,—I must confess your correspondent, Mr. A. Smith's, arithmetical display amuses me, and I do not dispute his aptitude at figures. All I have to say is, that the sum I assigned as the cost was that given me by the Rev. M. Franks, vicar of St. Paul's, Huddersfield; and the lightning conductor was erected before the scaffolding was taken down, which materially abridged the expense, it being put up when the spire was in progress of erection.

M. Gay-Lussac had proposed a conductor composed of a series of wires, so as to form, when joined, a "strand." I presume having some resemblance to Mr. Andrew Smith's "wire-rope." As I have, in my *Treatise on Atmospheric Electricity*, given my reasons for doubting its safety, believing that one condition of security is, that the homogeneity of the meteor should not be distracted or disturbed by such an aggregation of wires, I cannot, therefore, leave unquestioned Mr. Smith's wire-rope conductors; it is only an individual opinion, but I would have no faith in its safety, nor would I trust myself to such doubtful security.

I have not the memorandum at the moment at hand, but will search for it; I would at present, therefore, merely ask Mr. Smith whether or not the last report to the Admiralty was not decidedly unfavourable to the wire-rope conductors, as far as used in the Navy; and whether or not considerable damage was sustained when ships were struck with lightning where the wire-rope conductors were employed and in use?

I am glad Mr. Lake admits that there is no theoretical objection to the form, &c., of my lightning rod, and his view is in harmony with numerous kindred opinions of eminent electricians. I am sorry to have to postpone, till next week, several communications—above all, that on carbonic acid gas, Portland-place, Hull, April 24.

J. MURRAY.

## CALIFORNIAN GOLD REGIONS.

The Hon. Butler King, who made a survey in the summer of 1849 of the gold-producing regions of California, as the acknowledged agent of the United States, has just forwarded his report to the Hon. John Clayton, Secretary of State, which has been published. According to this document, the population in 1802 was about 17,000; in 1831, it amounted to 23,000, from which number it did not vary much until the rush of immigration during last year. The gold region is said to extend between 60 and 500 miles from north to south, and from 40 to 50 miles from west to east, following the line of the Sierra Nevada. It embraces within its limits those extensive ranges of hills which rise on the eastern border of the plains of the Sacramento and San Joaquin, and extending eastwardly from 50 to 60 miles, they attain an elevation of about 4000 ft., and terminate at the base of the main ridge. There are numerous streams which have their sources in the springs of the Sierra, and receive the water from melting snows, and that which falls in rain during the wet season. The principal formation of these hills is talcose slate; the superstratum, frequently penetrating to great depths, quartz. This latter does not cover the face of the country; but extends in large bodies in various directions, in masses and small fragments on the surface, seen along the ravines, the mountains overhanging the rivers, and in the hill sides in original beds. From innumerable evidences and indications, it is a universally admitted opinion among intelligent men that the gold has been generated in, and probably with, the quartz; it is only found in particular localities, and attended by peculiar circumstances and indications, in the bars and shoals of the rivers in ravines and dry diggings. The rivers in forming their channels, or breaking their way through the hills, have come in contact with the quartz containing the gold veins, and, by constant attrition, cut the gold into fine flakes and dust; and it is found among the sand and gravel of the beds at those places where the swiftness of the current reduces it in the dry season to the narrowest possible limit, and where a wide margin is, consequently, left on each side, over which, during the rainy season, the water rushes with great force. In the dry seasons, these channels are mostly without water; and gold is found in the beds and margins of them in large quantities. The dry diggings are places where quartz, containing gold, has cropped out, and been disintegrated by water and the action of the atmosphere; the gold is thus left as originally produced, in fragments of all imaginary shapes and sizes, from a grain to several pounds. The evidences that the gold and its matrix, quartz, were generated together, are too numerous and striking to admit of doubt or cavil; they are found in combination in large quantities. A large proportion of fragments of gold thus found, have quartz adhering to them. In many specimens they are so combined that they cannot be separated without reducing the whole mass to powder, and subjecting it to the action of quicksilver.

In addition to these facts, it is beyond doubt true that several vein mines have been discovered in the quartz, from which numerous specimens have been taken, showing the minute connection between gold and this rock. The report states that these veins are equally rich in all parts of this remarkable country—that the quantity of gold collected, in 1848 and 1849, was probably \$40,000,000, of which \$20,000,000 were taken from the rivers, without sensibly diminishing their richness, except at some parts of the Sacramento, where great numbers congregated. There are 12 principal rivers producing gold—in the sands of which some are greatly richer than the Sacramento or San Joaquin, and have yet hardly been, comparatively speaking, touched. Adopting the hypothesis that the gold has been washed from the quartz rock, and that the mass of the range of mountains, 500 miles long by 40 wide, and rising in some places to an elevation of 4000 ft. above the sea level, the quantity of the precious metal, which must exist *in situ*, must be enormous, and beyond human means to come to any approximation to reality.

Mr. King then proceeds to suggest, for the consideration of the Government, a plan for colonising this gold region, and bringing it under the protection and within the jurisdiction of its laws; and he proposes, first, to reserve the gold region from the operation of the pre-emption laws and from sale, so that it may be regarded as the common treasure of the American people, and hereafter as a rich inheritance to their posterity; then appoint a commissioner of mines, and a sufficient number of assistant commissioners to carry out the law. Every American citizen, on application to the office of the commissioner, or his assistants, and paying an ounce of gold, or \$16, shall receive a license, entitling him to dig anywhere in the territory for one year; and any who shall discover, or purchase of the discoverer of a vein mine, shall be entitled to work it to a certain extent, under proper regulations, on paying to the commissioner such per centage on proceeds as may be a suitable tax for the privileges granted. The commissioners to be authorised to lay out sites for towns convenient to diggings, and farm lots for sale, and thus accumulate around these the comforts of civilised life. The money thus collected to be laid out in the formation of roads, bridges, and other means of transit, so necessary to the progress of a new country. He also suggests that a portion of the fund should be set aside as a school fund, and the establishment of a university for the education of the future youth of California. Mr. King adds this system of permits will prevent the desertion from the navy of an army, as soldiers and sailors, not being allowed to take permits, would soon detect; and it would form the workers into a formidable body police, united to protect the general interest. He also recommends the establishment of a mint in California.

**GOLD WASHING.**—Mr. W. Ball, of Chicopee, Massachusetts, has patented improved gold washer, of which he states the claim to be "in combination the mercury bath, a surrounding channel or groove, made to communicate therewith by a passage, and applied so as to intercept the mercury which is thrown out from the bath, whereby the mercury thrown out is again returned to the central cistern, without intervention on the part of the operator." In combination with the elements above claimed, I claim one or more concentric mercurial rings, arranged between it and the cistern or bath, the same being made to communicate with the main vessel or bath by any passage; namely being for the purpose of intercepting the small escaped particles of mercury, and retaining them until so washed by the water, that they will combine with the mercury contained in the said ring or rings. And I claim the spiral tube, as well as its perforated water diffuser or tunnel, in combination with the main hollow shaft, its bell-mouthed vessel or top, and perforated partition or separator; the whole being made to diffuse and apply the water to the auriferous earth and mercury bath, and prevent packing of it within the same, as specified.

## MINING IN SOUTH AUSTRALIA.—GOLD.

Advices have been received from Adelaide on the 17th January, by which we find that the colony was quite excited by further discoveries of gold, which had checked emigration to California, and started two joint-stock companies for the washing and streaming for gold; one is advertised as the South Australian Gold Company, "for washing and streaming for gold within the colony of South Australia," with a capital of 25,000*l.*, in 5000 shares, of 5*l.* each. The provisional committee of management consists of some of the best colonial names—viz.: Messrs. Chas. Beck, A. L. Elder, B. A. Kent, M.D., J. B. Montefiore, John Morpeth, M.L.C., Burnett Nathan, J. B. Neales, John Waterhouse, and G. M. Waterhouse. The prospectus states that—

"It has long been the opinion of practical and intelligent persons, both in Europe and in this colony, that large deposits of the precious metals exist in some localities in South Australia. Acting upon these opinions, and aided by further enquiries, a number of gentlemen have, for the last 18 months, been carefully examining the various districts, and have employed during that period the best talent the colony afforded—the examinations having extended throughout the greater portion of the settled districts of the province, and Captain John Phillips, Mr. Chas. Adelsberg, and others having been constantly employed upon this service; the proprietors have also been in communication with parties in England, including Sir Frederick I. Murchison, whose opinion is highly encouraging; and when it is stated that the gentlemen whose names are now published, with others, are the parties who have been so long engaged in the selection of the lands and superintendence of this important matter, it is hoped that confidence may be safely reposed in their united judgment. Acting with great caution, and after the most careful examination and analysis, 1638 acres of land in fee simple have been purchased, and 400 acres secured at a favourable rental, thus commanding about 30 miles of water-courses open for immediate operations. Specimens of the most satisfactory nature have been obtained, and the analyses of the gold show a state of purity equal to 96 per cent. To secure this very valuable property, the prospects relating to which justify the most sanguine expectations, the original proprietors have expended only 3200*l.*—having succeeded in obtaining a large portion of the land at the upset price. Properties of this value and magnitude are found to be so much more suited to the management of a company than falling upon a few private individuals, that the proprietors are induced to form the whole into a public company—not, however, estimating the value of the property in accordance with the strong opinions of many parties, or at any thing like what they may fairly be considered to be worth, from the results already obtained, but upon the calm and sober views of men of business, accustomed to regard such adventures with needful prudence. They, therefore, propose the capital of the company at 25,000*l.*, in 5000 shares, at 5*l.* each—1600 of these shares to be offered to the public forthwith, and the proceeds to be employed in repaying, without interest, the original cost of land, &c., 3200*l.*, and the residue (4800*l.*) towards a working capital, which is not expected to be required, and will, in that case, be returned to the shareholders; the remaining 3400 shares the original proprietors are willing to accept instead of money, as an earnest of their strong confidence in the property of the company, and as compensation for their long and arduous exertions in bringing the affair to the present undeniably satisfactory position."

The applications for shares are to be accompanied by a deposit of 1*l.* per share—the balance to be paid on allotment. A correspondent says that "the most implicit faith may be placed in all these assertions"—nay, that "the known facts would have justified a far more sanguine statement."

The second company professes to be the veritable Onkaparinga Gold Company; and, according to the terms of their announcement, the parties interested propose to admit subscriptions at a lower rate of bonus than the first company.

Some interesting particulars appeared in the *Mining Journal* of the 30th of March, by which it will be seen that gold has been found in small quantities from time to time by various parties in South Australia, and that for nearly two years past the process of exploration has been going on silently and cautiously, and the result is the formation of these companies, backed by some of the best names in the colony, who guarantee the sober reality of what has hitherto been only a dream, "that gold exists in large quantities in the soil and alluvial deposits made by the rivers of South Australia." There are great expectations that both companies will be eminently successful, and that the colony will be greatly enriched by these discoveries. The disposition which existed for emigrating to California had quite abated, and parties who had engaged passages were forfeiting their passage money, being convinced that they were going to a distance to seek that which was to be found at the door.

The whole line of the Onkaparinga is said to exhibit auriferous deposits, on which river the Australian Gold Company had secured various sections. In some parts it was expected that gold in large quantities would be found.

An analysis of the specimens exhibited gave the following results:—  
Gold ..... 96.4137.—Value, 23 5-32 carats.  
Silver ..... 3.5863.

The composition of the dust was—  
Gold ..... 57.666  
Silver ..... 1.433  
Oxide of silver ..... 39.333  
Ganga quartz ..... 7.168=100.

Previously to the announcement of the two gold-mining companies, the facts contained in the following paragraph, which had appeared in the *South Australian* of the 6th November, comprised almost all that was known on the subject:—"It is the intention of the South Australian Company to begin washing for gold. It exists in their surveys on the Onkaparinga and Torrens is certain—Mr. Gilles having seen it taken out. From three shovels full of gravel, taken at random from the bed of the Torrens, near the Wool Sheds, 100 grains were extracted in his presence; and he has seen it for 10 miles along the river, on different parts of the company's property. We have seen a specimen of the gold-dust, and another has been sent to London. It is in very minute particles—the largest not nearly the size of the smallest pin's head. We have also seen gold-dust found in other localities by private persons. It is found in the Torrens, on the property of Mr. Charles Campbell, and at Lake Osmond, on the Onkaparinga, near Balhannah, on that of Mr. Osmond Gilles. For many months a company has been organising to work these discoveries. It seems likely that gold may have accumulated in the rivers for centuries past. It is known to exist in the copper ores of the colony, though not, perhaps, to an extent which would pay for extracting; but as the baser metal perished, the gold would, of course, remain; and the natural action of the floods would carry it down the mountain streams."

With respect to general mining prospects, the accounts were, in some cases, very satisfactory. In the Burra Burra Mine a new lode of fine red oxide had been discovered, and the average number of pitches had been taken in the last survey-day by about 260 miners until the 1st of March last, to the satisfaction of all parties. The main lode of the Wheel Barton had been uncovered for several fathoms, and in various parts it exceeds 15 ft. in breadth. The results of the experiment had proved highly satisfactory, and the reports of the workings, upon the whole, are stated to be very encouraging for the prospects of the shareholders. In the Strathguy Mine a new lode of fine red oxide had been out, and was found to be 6 ft. wide, 2 ft. of which are composed of very rich ore, and large quantities of native copper have been extracted.

The discovery of a new copper mine in the Barossa Range had excited great attention, as bidding fair to equal the famous Burra Burra.

**BURRA BURRA MINES.**—The public survey was held at these mines on the 4th Jan., and the lettings went off with satisfaction to all parties. An average number of pitches and bargains were let to about 260 miners, to expire on the 1st March. The mine is reported to be looking unusually well; and in the 30 fathom level, to the north of Kingston's shaft, and to the north of the large malachite lode, a fine lode of red oxide had been discovered. The Engine, Kingston, and Ayer's shafts were down to the 40 fathom, and preparations were making to drive from those shafts on that depth. The last take produced a full average quantity of ore, and this letting was expected to be equally productive.—*Gazette and Mining Journal.*

**MOUNT LIVERPOOL.**—We have to congratulate the inhabitants of Port Lincoln on the purchase of several splendid sections near Mount Liverpool, which for some time have been known by everybody but the Government officials to contain noble lodes of copper. This, in connection with the purchase made of two sections of the port at Tunby Bay, will give Port Lincoln a filip which it has not had since its establishment. It is said that the three sections at Talala have been purchased on the strong recommendation of Mr. Trewartha, the Government surveyor.—*Ibid.*

At a meeting of the North Kapunda Mining Company, the report of the directors, which was read and adopted, recommended that the "shareholders buy between themselves the remaining 209 undisposed of allotments in the township—23 of which are let to tenants at the annual rental of 2*l.*, and have houses built on them—at a price to be agreed on by this meeting, but which price the directors recommend to be fixed at 10*l.* cash, for those allotments let to tenants, and 8*l.* credit, or 6*l.* cash, for the unimproved allotments."

**PATENT COPPER WORKS AT KOORINGA.**—These important works are progressing steadily and successfully. One of the new refining furnaces is at work, which is capable of refining about 40 tons of fine copper per week. In January about 80 tons of tough cake copper were dispatched from the works for the port.

The following is the latest table of the prices for mining shares:—

Companies.	Amount.	Paid-up.	Price per Share.
Adelaide .....	25 0 0	25 0 0	£1 5 0
Belvidere .....	5 0 0	5 0 0	3 0 0
Burra Burra .....	5 0 0	5 0 0	141 0 0
Enterprise .....	3 0 0	3 0 0	4 15 0
Greenock Creek .....	5 0 0	5 0 0	—
Mount Remarkable .....	—	22 10 0	11 0 0
Montacute .....	55 0 0	55 0 0	—
North Kapunda .....	5 0 0	5 0 0	1 6 0
Parangana .....	1 5 0	1 5 0	1 5 0
Port Lincoln .....	5 0 0	5 0 0	6 10 0
Princes Royal .....	50 0 0	41 0 0	50 0 0
Royal Mining Company .....	10 0 0	10 0 0	—
Wheel Gweller .....	10 0 0	10 0 0	12 0 0
Wheel Maria .....	—	—	5 10 0

The attention of the colonists was not wholly absorbed by the gold mania from more immediate subjects of local benefit, the Adelaide Gas Company having been started for lighting the city.

## EMIGRATION TO THE UNITED STATES.

A prospectus has just been issued by a company, formed for the purpose of facilitating emigration to North America, under the title of the United States Land Company. As emigration to the United States is constantly on the increase, and as a vast majority of the emigrants leave their native shores without any plan for their future proceedings, and are thus exposed to numerous and unforeseen difficulties, the object of the company is to obviate these evils, as far as is practicable, by providing to the emigrant, on his arrival, an eligible location, a comfortable home, and other advantages. It is intended to purchase well-selected lands in the various states of the Union; but, as an immediate commencement of operations, arrangements have been made for the purchase of 60,000 acres of land in the central part of Texas, situate in Milan County, the finest portion of the state, about 40 miles from Austin, the seat of Government. It is said to be well supplied with streams, with groves of fine timber for building, and other purposes, and interspersed with rich prairie or meadow land. The soil is suited to all kinds of British agriculture, and to the cultivation of all European fruits and vegetables, as well as to the production of tobacco, figs, peaches, and the vine, which grow luxuriantly; and south of 34° of latitude cotton is cultivated with success. The climate of this portion of Texas is said to be most healthy—neither so hot in summer or so cold in winter as in the other southern states of the Union. The atmosphere is continually tempered by the gulf breeze, which blows from the south-west, rendering the temperature delightful, and favourable to health and life. The lands will be sold in lots at 6*s.* per acre, and measures will be taken to secure to emigrants, at the most moderate cost, the means of easy and most rapid transit, both by sea and land, with every attention to their health and comfort; and Mr. Catlin, the well-known traveller among the Indians in North America, will shortly proceed to America as local superintendent, to establish the first settlement on the company's lands. This gentleman's personal knowledge of the country, and his connection with the company, offer the best guarantee that the most eligible system of settlement will be adopted—one which only requires the combined action of the emigrant to insure success.

A supplementary prospectus has also appeared, which will be found in our advertising columns, and relates exclusively to the mining department, the capital for which will be kept separate from that devoted to the purchase of land and colonisation; and for which 15,000 shares, in series of 5000 each, at 1*l.* per share, will be allotted from time to time.

## EMIGRATION TO THE WESTERN STATES OF AMERICA.

Mr. Catlin, the well-known traveller among the tribes of the red men of the "far west," and who has contributed so much to our present knowledge of the mighty rivers, prodigious forests, and luxuriant prairies of the great Mississippi and Missouri valleys, delivered an interesting lecture on Thursday evening, at Exeter Hall, on their advantages to emigration, illustrated by maps and appropriate paintings of his own execution. He commenced, by saying that the subject which he had promised to lay before them that evening was one not only of a pleasing nature, but of the greatest importance; the inquiry into the adaptability of a great country to the wants and exertions of the superabundance of the population of Europe, he considered a sublime subject; and, although it might be in abler hands, having traversed, during a period of nine years, the whole of that immense territory, he felt satisfied he could describe it truthfully. He felt convinced, that with all our geographical discoveries in all parts of the globe, no country, no other such field of enterprise, had ever yet been found; it was interesting to the geologist, the mineralogist, the botanist, the ethnologist, the agriculturist, and to the thousands of emigrants who are taking, and who will continue to take, up their abode in this great and magnificent country.

Mr. Catlin then exhibited a large map of the several states of America, through which run the Mississippi, the Missouri, the Ohio, the Red and other large rivers, including the great lakes, California, New Mexico, and Texas, forming a tract of country 2000 miles long, by a breadth, from east to west, of 5000 miles. To give a more clear idea of the extent of the country, it was stated that Lake Superior was as large as Great Britain; that there were 10,000 miles of navigable rivers, and which would probably eventually extend to 15,000; that 1200 large steamers, of from 1200 to 1400 tons burden, were in constant motion on them and the lakes, carrying the necessities of life and civilisation all over this luxuriant continent; and that it had been estimated that 1,000,715 tons of water per minute descend the Falls of Niagara. On ascending the valley of the Mississippi, there scarcely appeared a rod of land but what contained the richest soil, producing the most luxuriant grass in the rolling prairies, which abounded with flowers of every hue, and wild strawberries in abundance. Since the settlement of the eastern states, it was calculated that 9,000,000 English inhabitants had peopled the more western states, and population was gradually, but surely, penetrating the prairies to the foot of the Rocky Mountains. Mr. Catlin then referred to Texas, a state against which there was much unjust prejudice existing in this country. It was about four times the size of England, and having travelled in it in all directions, he was enabled honestly to say, a finer or more healthy climate, and a richer soil, did not exist. Often had he, after a refreshing night's rest, beneath the canopy of Heaven, after rising and shaking the dew drops from his brow, admired the scenery around him, and exclaimed to himself, "what a fine country will this become, when blessed by the tide of civilisation pouring into it." Its peculiar and favourable situation for trade and commerce were then noticed. Situated on the Gulf of Mexico, it commanded, by its great navigable rivers, a trade from its interior with the West India Islands and South America; and placed directly between the United States, and Mexico and California, every source of communication and transit must pass through its lands; and a railway was already projected from New Orleans to California.

Mr. Catlin then exhibited a number of paintings, illustrative of the subjects he had treated on; he explained the extraordinary belt of forest which runs north and south, a distance of 900 miles, with a width of from 2 to 5 miles, crossing all the rivers in the western states, and called the "Cross Timbers." The eastern margin of this belt is broken by curves and convexities of outline; but the western line is as direct throughout its course as if artificially trained by human aid. This extraordinary freak of Nature has never yet been accounted for; scientific examinations of the soil, and the strata beneath, have been made, but nothing has yet been found to account for this immense patch of forest, bounded east and west by wide-spread naked prairies. The Indians call it the "Mystery," and whenever they cook their food within its boundaries, they invariably sacrifice a portion to the Great Spirit. One painting represented emigrant boats in tow of a steamer; and Mr. Catlin said, he once travelled up the Mississippi with three such boats in tow, when a family went on shore to take possession of their land, on which was their tent and wagon. Four months after, on his return, he found them in a comfortable house, with good crops of corn, potatoes, &c., and by them was most hospitably received. Representations were given of different aspects of the river, the undermining of its banks, and deposits of snags, so dangerous to steamers, particularly at night; also the luxuriant growth of grass and wild flowers in Texas, which a person on horseback, riding through, could scarcely see over, and which when cut down and burned, formed a soil which would produce fine crops, without the use of the plough.

Mr. Catlin, during these illustrations, dwelt particularly on the political and pecuniary advantages an emigrant had. Here were no persons to tax him for a 10th part of his produce; he paid his fair proportion to the expenses of good government; he followed the bend of his own mind in religion; and the moment he became possessed of his land he had a voice in the election of legislators. The public school system, as established in every state of the Union, was much extolled; for by it every child, male or female, received a good education.

The lecture was listened to with admiration and great satisfaction by a very numerous audience, which was often expressed by hearty plaudits.

According to private intelligence a very rich gold mine has been discovered in the vicinity of Jellissawetpol, government of Tiflis.

**NEW MINERAL DEPOSIT.**—Mr. H. Evans and a party of gentlemen have purchased, at the upset price, a tract of country upon the Rhine, containing, it is said, large deposits of copper ore, of a very high per centage.

**GIBALTAR.**—Accounts of the 6th inst. report that the stock of English iron was lessening, with a limited demand, and that Spanish lead was still wanted, with no supply.

**LIANFAIR MINES.**—These mines, which have for the past five years given employment to a considerable number of workmen, are, at present, at a complete stand-still.—*Swansea Herald.*

The sinkers at Burnhope Colliery, the property of J. W. Williamson, Esq., reached the Hutton seam, 4 ft. 8 in. thick, on the 12th inst., with a new shaft, at the depth of 60 fathoms.—*Gateshead Observer.*

**ABSCESSES, PILES, FISTULA, AND ULCEROUS SORES CAN BE CURED BY USING HOLLOWAY'S OINTMENT AND PILLS.**—The very satisfactory results arising from the invaluable ointment, in cases where patients have been suffering from abscesses, ulcers, piles, fistulae, or burnings down, have induced several of the medical profession, eminent for their skill, to introduce it into the hospitals and their private practice; and in many instances where the sufferer was considered incurable, Holloway's ointment, in conjunction with his pills, has healed the most desperate wounds, after every other remedy has been tried in vain. There is no medicine known that can equal it for the cure of scrofula, emphysema, and diseases of the skin.—Sold by all druggists, and at Professor Holloway's establishment, 244, Strand, London.



**THE IRON, HARDWARE, AND METAL TRADES' PENSION SOCIETY.**—The anniversary dinner of this society was held at the Albion Tavern, Aldersgate-street, on Wednesday, the 24th inst.—Mr. G. B. Thorneycroft, of Wolverhampton, Staffordshire, took the chair, and in giving the toast of the evening, "Prosperity to the Iron, Hardware, and Metal Trades' Pension Society," said he was glad to be able to announce that there was now an opportunity held out to the Staffordshire ironmasters to join the London society—an opportunity which he knew they would not allow to escape. He promised them that when he returned to Staffordshire, he would tell the ironmasters the advantages that could be derived by their joining a society such as this one, over which he had the honour that night to preside. The chairman concluded, by remarking that nothing could be more generous or more Christian than the objects of the society, which were to grant permanent relief to deserving and necessitous members of those trades, and to their widows, by pension or otherwise. The toast was cordially responded to. The healths of the Mayor of Birmingham, Mr. Lucy, the vice-president, the treasurer, the secretaries, and the committee, were then drunk, and responded to. It was announced to the meeting by Mr. Thorneycroft, that during the last year the sum of 1800*l.* was subscribed to the society; and, according to the calculation which he made of the subscriptions which had been given in addition on that day, there was a sum amounting to about 400*l.* or 500*l.*—[We regret to state, that the society was deprived of the services of Lord Lewisham as chairman, in consequence of a severe domestic affliction. His lordship, however, kindly remitted a donation of 10*l.* 10*s.* to the society. Mr. Thorneycroft, at almost a moment's notice, undertook the office, and the hearty and cordial manner with which he went through his duties, called forth the warmest applause of all present. We anticipate, from the promises made by the chairman, that by the period of the next anniversary festival, the society will embrace names which will reflect mutual honour.]

**GALVANIZING IRON AND OTHER METALS.**—Mr. T. M. Gladstone read an interesting paper on this subject at the Liverpool Polytechnic Society, in the course of which he said that all metals, when placed in proximity, were liable to galvanic action, or electric properties, and explained the peculiar nature of all the ordinary metals (excluding gold and silver), and their respective tenacity and strength. Iron was the most valuable of metals, but the tendency to oxidize, or rust away, was a drawback, until the discovery of galvanism, which renders it durable—and almost imperishable. The galvanizing of this metal was first accomplished in France, and the operation, after the metal was washed with acids, was effected by the application of zinc. He pointed out a variety of ways in which iron so prepared could be usefully applied; and produced specimens of iron bolts, pins, &c., which had been many years on board ship, and were perfectly preserved after constant exposure to heat and cold, wet and dry. The telegraph wires were of galvanized iron, and a large coil was produced, of great fineness and strength. Galvanized iron was extensively used by Mr. Hartley in the lining of the new dock gates, which had to resist an immense pressure of water. Mr. Gladstone then explained the manner of coating iron with oxide, by galvanism, giving it great resistance to corrosion.

**THE GORT SILVER MINES, IRELAND.**—(From a Correspondent).—As we spare no pains to collect the fullest and most authentic information connected with the social progress of this country, and the development of her industrial resources, we are now enabled to lay before our readers an account of the Gort Silver Mines, which were referred to in the *Mining Journal* of the 30th March. They are situated within a short ride of the thriving town of Gort, in the direction of Kinvarra, at a place called Cahriglassane, upon the property of Mrs. Blair. The whole surface of the country appears to be covered with immense fragments of limestone, upon the removal of which very fine soil is sometimes found, but more frequently great quantities of limestone will be discovered under the surface. The limestone is brittle and light coloured, and the soil unproductive and barren. In the distance the Kinvarra mountains rise, and give to the landscape a graceful termination. The mines are situated upon a flat surface of country, which abounds with turloughs, formed by the subterranean river of Gort. This river flows out of the lake of Lough Cooter, and after proceeding for about a quarter of a mile, falls into a natural cavern of limestone rock at Rindiligh, where it disappears for about a mile—its course being clearly traced through several holes, like wells, several of them of great depth, at the bottom of which the water is clearly heard, by dropping a stone into the holes. The river again makes its appearance at Canahoun, where it flows out of a natural and picturesque arch of rock, and after passing through the town of Gort, turning in its progress several large mills, it alternately sinks and rises till it finally joins the sea at Kinvarra, a distance of 7 miles, the waters percolating through the sands below high-water mark. Specimens of the ore of this mine have obtained 35*l.* 2*s.* 6*d.* per ton, when brought to this state, and the ton of ore sometimes contains 240 ozs. of silver. We saw nearly 600*l.* worth of the ore ready, or almost ready, for exportation. Some of the specimens of the ore were beautiful. Sometimes it resembles bright masses of lead freshly broken—sometimes it is blue or orange or dark brown, and sometimes it assumes the most beautiful blue or green imaginable. One specimen which we took from a great mass of clear white spar, 12 or 14 feet in thickness and height, was beautifully tinted with light green, and resembled a piece of coloured crystal. Some other specimens were of the richest deep blue, and sometimes the blue and the green will be found united in the same specimen. The silver is generally found in connection with the lead, but a few pieces of copper ore have been found, generally of a deep brown colour, spangled with bright gold-coloured marks. There are at present 850 men employed at the mines, but as soon as the works are opened a little further a larger number of persons will be employed. The difficulty of procuring any thing not usually required in the neighbourhood is a serious inconvenience, and cause of delay. It was, for instance, found impossible to procure a leaden pipe of particular dimensions in Gort, a few days later, for a portion of the works, in consequence of which much time was lost, until it would be obtained from Limerick, a distance of 30 miles; but these difficulties are incidental to all new undertakings, and can be remedied only by time. Mr. Collett, with a wise liberality, instead of engaging workmen at the ordinary wages of the country (6*d.* to 8*d.* a-day), pays the common labourers at the rate of 1*s.*, and the boys 8*d.* per day. He is, consequently, very popular, and has every reason to approve of the conduct of the men under his charge. He has engaged some Cornish workmen from England, who show a good example of industry to their Irish fellow-labourers, and the best feelings exist.

**CORNISH MINERS IN FRANCE.**—On Monday last, about 30 miners and tin-smiths embarked at this port, on board a French lugger, for Pirac. They are from the parishes of Madron, Paul, Saneed, Ludgvan, and St. Buryan, and, we understand, were engaged by a company to prosecute tin mining in that country.—*Pennance Journal.*

### New Patents.

#### LIST OF PATENTS GRANTED DURING THE PAST WEEK.

- P. Arkell, of Chapel-street, Stockwell, Surrey, engineer, for improvements in the manufacture of candle wicks.  
A. G. Anderson, of Great Suffolk-street, Southwark, Surrey, soap manufacturer, for improvements in the treatment of a substance produced in soap-making, and its application to useful purposes.  
J. T. Chapman, of Wapping, Middlesex, engineer, for improvements in apparatus for setting up ships' rigging and raising weights.  
E. A. Brooman, of the firm of J. C. Robertson and Co., of Fleet-street, London, patent agent, improvements in the manufacture of zinc, and in the apparatus employed therein.  
H. Ritchie, of Brixton, Surrey, for improvements in the manufacture of copper, brass, and other tubes or pipes.  
W. Macalpine, of Spring Vale, Hammersmith, general dresser, and T. Macalpine, of the same place, manager, for improvements in machinery for washing cotton, linen, and other fabrics.  
C. Humphrey, of Downing College, Cambridge, M.A., for improvements in the manufacture of candles and oils, and in treating fatty and oily matters, and in the application of certain products of fatty and oily matters.  
A. Panvels, of Paris, France, merchant, and V. Dubochet, also of Paris, France, merchant, for certain improvements in the production of coke, and of gas for illumination, and also in regulating the circulation of such gas.  
R. Laming, of the New Chemical Works, Isle of Dogs, Middlesex, chemist, and F. J. Evans, of the Hornsey-road, Westminister, gas engineer, for improvements in the manufacture of gas for illumination, and other purposes to which coal gas is applicable, in preparing materials to be employed in such manufacture, and in apparatus for manufacturing and using gas; also improvements in treating certain products resulting from the distillation of coal, parts of which above-mentioned improvements are applicable to other similar purposes.  
E. Newton, of Chancery-lane, Middlesex, civil engineer, for improvements in casting type. (Being a communication.)  
Peter Armand Lecomte de Fontainebleau, of South-street, Finsbury, for certain improvements in the manufacture of wafers, and in the machinery or apparatus connected therewith. (Being a communication.)  
Peter Armand Lecomte de Fontainebleau, of South-street, Finsbury, for a new and improved mode of conducting, consuming, and disengaging smoke from its deleterious compounds. (Being a communication.)  
Joseph Jean Baranowski, of London, gentleman, for improvements in machinery for counting, numbering, and labelling.  
Ernst Werner Siemens, of Berlin, Prussia, electric engineer, for improvements in electric telegraphs.

#### DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

- R. Edwards, Bow, knife-cleaning apparatus.  
A. Marshall and Co., Park-side, Hyde Park-corner, part of the apparatus used in corsets, denominated the "Corset-a-tous Reports."  
J. Robertson, Emmett-street, Poplar, apparatus for giving signals by sound.  
Mary Ann Nash, Paul's-cray Mill, Kent, impressing surface of a dandy roller, for producing water-marks on machine-made paper.  
A. Gregory, St. George's-street East, London, safety plate for a ship's scuttle.  
H. Potts, Brooke-street, Holborn, postage-stamp damper and affixer.  
Reeves, Greaves, and Reeves, Birmingham, sword tang.  
W. Horne, Long-acre, barouches, or barouches phanton.  
R. Waddell, Liverpool, capstan.  
Crosse and Blackwell, Soho-square, stopper for glass and earthenware bottles and jars.  
T. Kerslake, Exeter, boiler and furnace.  
William Alex. Adams, Midland Works, Smethwick, Staffordshire, carriage spring and  
N. Downing, the Phoenix Foundry, Rhilston, cast-iron railway carriage-wheel.  
J. Finlay, Glasgow, radiating register stove.  
J. Weems, of Johnston, Renfrewshire, and T. Buchanan, Bridge of Weir, Renfrewshire, cover for carding and drawing-frame cans, applicable to cotton, flax and woollen fabrics.—*Mechanics Magazine.*

**EASTERN COAST OF CENTRAL AMERICA COMMERCIAL AND AGRICULTURAL COMPANY.**—The Committee appointed by the Debenture Holders on the 18th December last, hereby give Notice, that a sufficient sum has been obtained under the provisions of the Resolutions of the Debenture Holders to enable the Committee to take preliminary steps for the obtaining a GRANT from the Guatemalan Government, and being anxious to afford an opportunity to the general body of the holders to come in and participate in the benefits which may arise from the proposed proceedings, the committee hereby EXTEND the TIME for the PAYMENT of TWO SHILLINGS and SIXPENCE per debenture to SATURDAY, the 27th day of APRIL next, after which day the Committee will feel bound to close the subscription list. The payment is to be made, as heretofore, at the office of Mr. N. Lindo, solicitor, 17, King's Arms-yard, Moorgate-street, where the numbers of the debentures will be taken, and a receipt given for the amount paid.—Dated March 22, 1850.

### UNITED STATES LAND COMPANY.

Capital £120,000, in 30,000 shares, of £4 each.  
To be issued in four series, two of 10,000 shares each, and two of 5000 each, as required.  
A deposit of 5*s.* per share, payable on allotment of shares.—Provisionally registered according to Act of Parliament.

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M. HARTLAND MAHON, Esq. WILLIAM PROSSER, Esq.  
HENRY MORTLOCK OMMANNEY, Esq.  
**MANAGING DIRECTOR.**—William Prinsep, Esq.  
**LOCAL SUPERINTENDENT.**—Geo. Catlin, Esq.  
**SOLICITORS.**—Messrs. Sutton, Evans, Ommannney, and Prudence.  
**BANKERS.**—London Joint-Stock Bank.

**COMPANY'S OFFICES.**—No. 9, WALBROOK near the Mansion-house, London.  
**AGENCY IN THE UNITED STATES.**—North American Land and Emigration Company, 130, Broadway, New York; Ferris Fall, Esq., President; T. Rawlings, Esq., Manager.  
This Company is formed to facilitate emigration to the United States of North America. It is well known that an immense and constantly increasing emigration is going forward from the United Kingdom and the northern parts of the continent to that country. It is also known that a vast majority of the emigrants leave their native shores without any plan of future proceedings, and are, consequently exposed from the moment of landing to a variety of unforeseen difficulties.

The object of this Company will be to obviate those difficulties as far as practicable, by combining the provision of an eligible location, a comfortable home, and other material advantages to the emigrant, with profit to those who may support the enterprise by subscriptions for shares; and arrangements have been completed with the North American Land and Emigration Company of New York to co-operate with this company in carrying out these intentions in the most effective manner.

It is intended to purchase well selected lands, in none but salubrious and convenient localities, upon eligible terms, and after proper investigation; to be subdivided and sold in such quantities as may be desired for settlement or investment, regard being had, in the allotments and sales, not only to the accommodation of settlers, but also to the improvement in value of the reserved portions, for the greatest advantage of all parties concerned.—The directors have undertaken the sale of lands on commission, and it is believed that an agency of this character may be greatly and advantageously extended.

Large tracts in the states of Illinois, Virginia, Indiana, New York, Ohio, Tennessee, Wisconsin, Michigan, and Pennsylvania, have already been placed at their disposal, and are recorded on their books for sale.  
The directors will be prepared to receive and hold in trust any sums of money emigrants may, for better security, desire to place with this company, pending their decision as to the locality they may prefer. A receipt and certificate will be granted in such cases, authorizing the general agents at New York, or the local agent, to consider such parties duly accredited with the company to the extent of their deposit; but, in case of their purchasing lands not belonging to, or under the control of, the company, the directors will engage to return the deposit, less 1 per cent. commission for the advantages derived from reference to this company.

To carry out the objects of the company, so as to secure success and satisfaction to the settlers, an arrangement has been made with Mr. George Catlin (who is well-known to the public by his writings on the Western States, and by his delineations of Indian character), to proceed in a short time, with the aid of suitable persons associated with him, to establish the most perfect and valuable tract of valuable prairie land, well known to him as a most favourable position for emigration, in the centre of one of the western states of America, under a title direct from the Government, which has been legally transferred to one of the directors, and duly registered in his name in the proper office of that country; and measures will be taken to secure, at the most moderate cost to emigrants, and without any profit to the company, the means of easy and rapid transit, both by sea and afterwards by land, to the place of destination, with every attention to their health and comfort.

By proceeding in this manner, the directors will be enabled to carry out the objects of the company, or at Mr. Catlin's rooms, 6, Waterloo-place, Pall Mall, where applications may be made, either for land or for shares, according to the terms set forth in the prospectus.

Parties desirous of accompanying Mr. Catlin on his expedition to the company's lands, must make early declaration of the same to the manager of the company, stating the number of his family, or party to be provided for, under the proposed arrangements.

### UNITED STATES LAND COMPANY.

(MINING DEPARTMENT.)

It must be admitted that the adventures which visited California in search of gold, on the Western Spurs of the Rocky Mountains, have been rewarded for their labours—notwithstanding the severe privations they endured, arising from the absence of a well-organized plan for their comfort and protection, and of any right or title to the lands under their immediate exploration.

The Directors of the United States Land Company have the most respectable and authenticated evidence that the Western Spurs of the Rocky Mountains, lying west of their lands in Texas, abound with this valuable mineral.

That mineral resources in these localities may proceed without interruption, and be based on practical measures, a title to the lands on which such valuable deposits are to be found will be secured, and the most perfect arrangements made for the supply of provisions, and the necessary conveniences of those comprising the mining staff.

Mr. Geo. Catlin's proposition to this Company (supported by a number of gentlemen wishing to accompany him, for the purpose of exploring these mineral regions) has been accepted; and his extensive and personal knowledge of this country, heretofore visited by him, and about which he is in possession of much valuable information, encourage the expectation that this department will prove both lucrative to the shareholders, and beneficial to the land department.

The mining shares will constitute and be kept a separate capital from that devoted to the purchase of lands.

15,000 shares, in three series of 5000 each, will be allotted from time to time, upon the Cost-book System, by which the liability is limited to the time during which such shares are held, as per 7 and 8 *Vic.*, cap. 110, c. 63.

The deposit on the first series of 5000 shares will be £1 per share; on the second series of 5000 shares, £1 5*s.* per share; and on the third series of 5000 shares, £1 10*s.* per share. Any subsequent call not to exceed 5*s.* per share—not more than two calls per annum.

The shareholders have the power to write off their names, and retire from the mining operations on payment of any arrears on calls, and this will exonerate them from any future responsibility.

The United States Land Company have the power to possess themselves of a number of mineral tracts, already known to be valuable, and have made arrangements for securing the title to any others that may be discovered. The advantages arising from this perfect control, and the exemption of royalty, will be apparent to those intimate with mining property.

As this novel investment may prove attractive, an early application for the first series is recommended, addressed to the managing director, at the offices of the Company, No. 9, Walbrook, London.

### ACCIDENTAL DEATH INSURANCE COMPANY.

(Completely Registered under the Act of 1837, c. 110.)

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(ADJOINING THE GOVERNMENT ANNUITY OFFICE, OLD JEWRY.)

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**CLASS I.**—2*s.* 6*d.* to insure £100.

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The numerous casualties in mines, collieries, &c., which, by depriving the workman of his life, plunge his family into misery and want, have given rise to this company, whose rates are so low as to bring the benefits of insurance within the reach of the humblest classes. The directors invite the attention of the owners and lessees of mines and collieries, and others employing large bodies of men, to the principle of insuring them in the mass—in which case an statement may be made from the above table.

WILLIAM YOUNG, Secretary.

**UNITED GUARANTEE AND LIFE ASSURANCE COMPANY.**—36, OLD JEWRY, LONDON.

**CHAIRMAN.**—The Right Honourable LORD ERSKINE.

**VICE-CHAIRMAN.**—JOSHUA P. BROWN WESTHEAD, Esq., M.P.

**TO BANKERS, DIRECTORS OF RAILWAYS, PUBLIC COMPANIES, AND EMPLOYERS GENERALLY.**—Particular attention is invited to the objects of this Company, which provides not only guarantee to employers for the fidelity of their officers, but offers an economical plan of life assurance, whereby important benefits are secured to the employed.—POLICIES for GUARANTEE and LIFE ASSURANCE are ISSUED SEPARATELY, if desired.—Prospectuses and further information may be obtained from J. KNIGHT, Secretary.

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EVER INVENTED, being only the size of a pocket-book, containing one pair of Mechi's ivory-handled peculiar steel razors, his magic strop, comb, and badger-hair shaving brush, price only 2*s.*; the same, with hair brush and soap dish, 3*s.*. To military men, and as a steam-boat or travelling companion, this invention is an invaluable acquisition. An immense VARIETY of other DRESSING CASES, both for Ladies and Gentlemen, either in fancy woods or leather, at all prices, to suit either the economical or luxurious. An extensive stock of Writing Desks, Writing Cases, Workboxes, and Bagatelle Tables, Razor Strops, Table Cutlery, Superb Paper Machie Articles, &c.  
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**MINING ADVENTURE: with a DIGEST of the COST-BOOK SYSTEM, STANNARIES, and GENERAL MINING LAWS.**

By THOMAS BARTLETT.

\*. Subscribers names received at the office of the *Mining Journal*, 26, Fleet-street.

**THE MINING ALMANACK for 1850: compiled and arranged**

by HENRY ENGLISH, Mining Engineer, &c. Under the special sanction and patronage of H.R.H. PRINCE ALBERT, Lord Warden of the Stannaries, Chief Steward of the Duchy of Cornwall, Devon, &c.—THE SECOND VOLUME will appear early in MAY NEXT, with ADDITIONAL TABLES and STATISTICS, connected with the Mining Interest.—Names of subscribers are requested to be addressed to Mr. H. English, 26, Fleet-street.

### PATENT IMPROVEMENTS IN CHRONOMETERS.

**WATCHES AND CLOCKS.**

E. J. DENT, 23, Strand; 33, Cockspur-street; 24, Royal Exchange (clock tower area), Watch and Clock Maker, BY APPOINTMENT, to the Queen and his Royal Highness Prince Albert, begs to acquaint the public, that the manufacture of his chronometers, watches, and clocks, is secured by three separate patents, respectively granted in 1836, 1840, 1842. Silver lever watches, jewelled in four holes, 6*s.* each in gold cases from 4*s.* to 4*l.* 10*s.* extra. Gold horizontal watches, with gold dials, from 8*s.* to 12*s.* each.

**DENT'S PATENT DIPLIODESCOPE,**

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### SEWERAGE OF LONDON.—The ATTENTION of the

COMMISSIONERS appointed to determine upon the MOST EFFICIENT MATERIAL for the CONSTRUCTION of the SEWERS of LONDON, is particularly directed to the ASPHALTE of SEYSSAL, which more than any other material is applicable to the CONSTRUCTING and INTERNAL COATING of BRICK CULVERTS and OTHER CHANNELS for DRAINAGE.

The experiments made by the Royal Artillery on the embankments of Plymouth Citadel, constructed of Seyssal Asphaltic Brickwork, under the orders of the Hon. Board of Ordnance, have fully proved the superiority, adhesiveness, and strength of Seyssal Asphalt over all other cementitious compositions. A printed account of these experiments can be had on application to

Seyssal Asphaltic Company—"Claridge's Patent"—Established 1838.

Note.—The application of the Asphalt of Seyssal is specially recommended by the Commissioners on the Fine Arts for covering the ground line of brickwork in marshy situations, and it has been suggested that it would be peculiarly applicable for covering the areas of closed *grove yards*, and for the construction of *catacombs*.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

### MASTERS & CO., ORIGINAL INVENTORS and SOLE

PATENTERS of the following SCIENTIFIC and USEFUL INVENTIONS, beg to call the attention of the Nobility and Gentry to their latest discovery in the preparation of SODA WATER, &c. &c., by their

PATENT SODA-WATER and AERATING APPARATUS.

By the aid of which Soda Water, and all aerated waters, can be made and fully charged with carbonic acid gas in a few minutes, and the flattest Beer or Wine can be made as brilliantly sparkling as Champagne in an equally short time, and the expense mere nothing.—Price of machine, 30*s.* and upwards, which needs only be seen to be appreciated.

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For making Dessert Ices, Freezing Spring Water, and Cooling Wine at the same time, with or without ice. The largest size is suitable for confectioners, and will make from 50 to 100 quarts of Dessert Ice in a few minutes.

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For producing Pure Ice from Spring Water, on your own table, in five minutes, without the aid of ice, by his Freezing Mixture, which will produce ice in one minute in the hottest climate.

Every description of APPARATUS for PRODUCING ICE ARTIFICIALLY.

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experience has fully confirmed the superior reputation of these LOZENGES, in the CURE of ASTHMA, WINTER COUGH, HOARSENESS, SHORTNESS OF BREATH, and other Pulmonary Maladies. They have deservedly obtained the high patronage of their Majesties the King of Prussia and the King of Hanover; very many also of the Nobility and Clergy, and of the public generally, use them, under the recommendation of some of the most eminent of the Faculty. They have immediate influence over the following cases:—Asthmatic and Consumptive Complaints, Coughs, Shortness of Breath, Hoarseness, &c. Prepared and sold in boxes, 1*s.* 1*d.*, and tins, 2*s.* 9*d.*, 4*s.* 6*d.*, and 10*s.* 6*d.* each, by THOMAS KEATING, chemist, &c., 79, St. Paul's Churchyard, London.

Sold retail by all druggists and patent medicine vendors in the kingdom.

### IMPORTANT TESTIMONIAL.

CURE OF COUGH AFTER ATTACK OF DYSPEPSIA.

Dover, 25th February, 1848.

Sir,—Please to send to Messrs. Barclay and Sons for enclosure another dozen of your excellent Cough Lozenges. Having lately had a severe attack of influenza, attended with violent cough for five days, preventing my laying down in bed, I made trial of your Lozenges, and am happy to say, with the blessing of God, they proved of the greatest service, and their use produced almost instantaneous relief. I give you this intelligence from a desire that others might also be led to make the trial. I hope they will experience the same result.—I remain, your's truly,

O. HAMPSHIRE.

To Mr. Keating, 79, St. Paul's Churchyard.

### THE TEETH.—DENTAL SURGERY.—MR. GAVIN, SUR

GEON DENTIST, 33, SOUTHAMPTON-STREET, STRAND, begs to call the attention of his patients and the public generally to his recent important improvement in ARTIFICIAL TEETH, and to his perfect and painless system of fixing them in the mouth, by which successful and scientific principle the removal of roots, or any painful operation whatever, is entirely obviated. Old pieces of teeth, or molars remodelled and adapted to the mouth with security and comfort. Mr. Gavin begs also to state, that, notwithstanding his late invaluable improvements in dental science, he still insures the same moderate charges and successful treatment which have procured him such extensive patronage.—A single tooth.....from 4*s.* 5*s.*

A complete set.....0 0 0

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